

**Maintenance**

**MAINTENANCE MANAGEMENT OF AIRCRAFT**

This publication implements AFD 21-1, *Managing Aerospace Equipment Maintenance*, and prescribes procedures governing aircraft maintenance management in the Air National Guard (ANG). It is applicable to both the Logistics and Operations Groups. It provides a broad management framework for commanders to adjust procedures to compensate for mission, facility, and geographic differences of the unit. Installation commanders, or equivalent, may alter the frequency, agenda, and participation in meetings required by this publication. Specific procedures for waiver requests and proposed changes to this publication are provided in Chapter 1.

**SUMMARY OF REVISIONS:**

Chapter 1: Establishes rag control requirements. Deletes PMEL and identifies requirements and procedures for local calibration of torque wrenches.

Chapter 2: Requires LG to sign the Special Certification Roster (SCR). Designates JEDMICS responsibilities. Clarifies SCR routing. Adds requirement for LG to establish Data Integrity Teams.

Chapter 3: Authorizes the weekly schedule to be published electronically. Further defines the routing of the SCR for training managers. Requires Plans and Programs to document their annual SAV to shops.

Chapter 4: Clarifies that the QA office will maintain a signed copy of the master SCR. Ensures follow-ups are conducted within 90 days of discrepancies found during TODO spot checks. TODO list of changes may be published electronically. Includes suggested courses for QARs. Added evaluation requirements for maintenance functions located in Operations.

Chapter 5: No change.

Chapter 6: Identifies shops responsible for local torque wrench calibration. Deletes PMEL. Specifies the engine shop chief as the OAP monitor. Adds new section for JEIM. Delineates additional responsibilities for munitions management. Aligns survival equipment under Ops with the full time manning document and under the LG with the military manning document.

Chapter 7: Minor changes and DLO for bombers have been moved to Chapter 10.

Chapter 8: Adds additional requirements for JEDMICS. Adds Mode IV IFF requirements for Air Defense alert and operations at Curacao FOL. Deleted 3 level from borescope, blade blending, and intake inspections. Further defined intake inspection requirements and added B-1s. Added section for operations at FOL Ft Drum NY. Established dropped object reporting requirements and LG, safety coordination. Adds ground training aircraft maintenance requirements.

Chapter 9: No personally purchased communication devices are allowed on the flightline.

Chapter 10: New chapter on Combat Turnaround Operations (CTO).

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## Chapter 1

### MAINTENANCE MANAGEMENT POLICY

**1.1. References, Abbreviations, and Acronyms.** Required and related publications, abbreviations, and acronyms used in this instruction are listed in Attachment 1.

**1.2. General Information.** This instruction prescribes, in generic terms, the maintenance organization, policies, and procedures to be used throughout the ANG. Local managers must effectively use their resources to ensure successful mission accomplishment. Managers may use any maintenance

management procedure not specifically prohibited by this instruction, other maintenance publications, or technical orders. Innovative management practices are highly encouraged; however, ANG, Logistics Policies and Procedures (ANG/LGMM) will be the final approving authority for all deviations to established maintenance practices. Waivers within the authority of ANG/LGM may be requested via E-mail, message, or letter. Waivers not within the authority of ANG/LGM must be requested in writing to the appropriate waiver authority, through ANG/LGMM. At unit level, the Logistics Group Commander (LG) or designated representative is responsible for all matters affecting maintenance. This instruction recognizes that command authority is exercised by the State Adjutants General and that policy and management guidance is provided by the National Guard Bureau (NGB). It is applicable during all technician and military duty periods.

1.2.1. Personnel at every level must continually examine existing processes and implement changes that improve or add value to these processes. Therefore, responsibility must be delegated to the lowest level.

1.2.2. Maintenance is responsible for ensuring safe, reliable equipment is available when needed. Readiness is the mission of Maintenance. Applicable technical manuals prescribe specific instructions for maintaining assigned equipment. Units are encouraged to question the prescribed procedures when a safer or more economical procedure will accomplish the desired result. Unit level managers are required to develop local procedures to determine maintenance effectiveness, capability, and quality.

1.2.3. Equipment readiness is the key to the maintenance mission. Maintenance personnel must keep equipment in a serviceable condition, safe, operable, and properly configured to meet mission requirements. Mission success is dependent on the sustained ability to provide mission-ready equipment at the time and place required. Quality maintenance prolongs equipment life, reduces costs, and is the responsibility of all maintenance personnel. Wing/Group commanders must continuously assess and balance operational mission and training requirements with the need to accomplish the periodic and preventive maintenance necessary to sustain the long-term viability of weapon systems. Mission Capability (MC) standards and goals must take these factors into account. ANG/LGM will establish and continuously evaluate weapon systems MC standards that reflect the capability of the ANG full-time support workforce.

**1.3. Manning.** Normal work schedules are planned around a 40-hour workweek. Units may consider flex, staggered or split work schedules to meet workload requirements. Although overtime work may be required to meet peak workloads, requirements must be reassessed when this becomes the norm. The LG or designated representative will be the approving authority when it is necessary to exceed 12 hours in a duty day.

**1.4. Maintenance Training.** Maintenance training is an essential element of improving and sustaining unit capability. It is one of the most important supervisory responsibilities. Training for personnel where combat skills are not reinforced in the normal generation of peacetime sorties (munitions build-up teams, weapons load crews, etc.) is particularly critical and requires special management attention. The LG, squadron commanders, supervisors and the Wing Weapon Manager (WWM) will provide priority support to maintenance training and when competing for resources such as serviceable aircraft, dedicated load facilities/locations, ramp space etc, the maintenance training program has equal priority with the unit's primary operational mission.

**1.5. Cross-Utilization Training (CUT).** The CUT program provides the work force internal flexibility by training individuals to perform tasks that are not in their primary AFSC. This training offsets periods of austere or low skill level manning and enhances combat capability by developing a broad base of skills to draw upon. Dependency upon peacetime, low work hour skills to perform cross-utilization tasks may create a sortie production capability shortfall when supporting combat operations. CUT skills should never be a long-term fix for an AFSC shortfall, as this could impact combat capability. Important considerations for units include:

- 1.5.1. Identifying the type of tasks for CUT and determining which individuals receive that training.
- 1.5.2. Providing CUT so that personnel can work with little or no assistance.
- 1.5.3. Ensuring CUT does not interfere with skill level upgrade training or weapons system qualification training.

**1.6. Maintenance Publications.** Each work center must have access to this instruction and pertinent allied publications. Access to publications does not mean that each work center must keep and file all approved publications that apply.

**1.7. Operating Instructions (OI).** Local instructions pertaining to maintenance are published as OIs. When crossing common lines, OIs must be coordinated and approved by the affected commanders. OIs are not published to change or supplement Technical Orders (T.O.). The appropriate safety function reviews any OI that affects munitions operations or safety. Quality Assurance will review all LOIs to ensure the instructions are technically accurate, complete and consistent with AF and ANG policy. OIs will be reviewed annually.

**1.8. Allied Publications.** Publications must be compatible with the procedures in existing T.O.s.

- 1.8.1. Conflicts between administrative and technical publications will be resolved in favor of the technical publication.
- 1.8.2. Conflicts between procedural technical publications and weapon system specific technical publications will be resolved in favor of the weapon system specific technical publication.
- 1.8.3. Conflicts between ANG and AF administrative publications are resolved IAW AFI 33-360, Vol 1, *Publications Management Program*.

**1.9. Warranted/Quality Tool Policy.** Commanders may satisfy unit requirements through local purchase if judged to be in the best interest of the government in terms of quality, timeliness, and cost.

**1.10. Tool Control.** All units will establish a tool control program and inventory system tailored to local requirements to aid in reducing Foreign Object Damage (FOD). As much as possible, tools should be arranged for fast inventory using "show and know" concepts. A local identification system will be used to clearly mark tools and Composite Tool Kits (CTK) with the owning organization. Inspect all tools periodically for serviceability according to T.O. 32-1-101, *Maintenance & Care of Hand Tools*. Mark mobility toolboxes according to AFI 10-403, *Deployment Planning*.

1.10.1. Tool Room Operation. When used, tool issue sections store and issue tools and equipment for a work center. Limit tool issue sections to the minimum required to support efficient work center operations. Establish procedures to ensure custodial control. Set up tool rooms to ensure positive accountability. Process tools that are lost, damaged, destroyed, or become unserviceable according to AFMAN 23-220, *Reports of Survey for Air Force Property*. As a minimum, conduct a yearly inventory of all non-expendable tools and equipment.

1.10.2. Lost Tool Procedures. Units will develop and publish local guidance. As a minimum:

- 1.10.2.1. On the flightline, missing tools will be reported to the expeditor or production supervisor and Maintenance Operations Center (MOC) as soon as the loss is known.
- 1.10.2.2. When a tool is missing on or near an aircraft, a Red X will be placed in the aircraft forms with a discrepancy giving the description of the tool and, if possible, the general area where the tool was lost.
- 1.10.2.3. When, after a thorough search, tools assumed lost on an aircraft cannot be found, only maintenance officers or maintenance superintendents as designated by the LG may clear the Red X entry.
- 1.10.3. Units will identify and control bench stock items that are locally authorized in tool kits.
- 1.10.4. Rag control procedures will be developed and published in local guidance.

1.10.5. Tool Control Exemptions. Shop tools not used in, on, or around aircraft/engines and issued personal equipment items such as headsets, communication cords, reflector belts, gloves, etc., may be excluded, by the LG, from the tool control program.

**1.11. In-Process Inspection (IPI).** Accomplish IPIs in accordance with T.O. 00-20-1, *Aerospace Equipment Maintenance General Policies and Procedures*. The squadron maintenance officer and/or maintenance supervisor compile a list of squadron tasks requiring IPIs. They submit this list to their respective Quality Assurance section for LG approval. Publish IPIs in a Logistics Operating Instruction (LOI).

1.11.1. Documenting IPIs. Enter "IPI required at step (number)" in the discrepancy block of the applicable forms and automated system narrative. The person doing the task notifies an IPI certifier at the appropriate step. The certifier then complies with the IPI and enters their signature (employee number in automated systems) and rank next to the IPI statement in the corrective action block. IPI documentation in an automated system is not required for off-equipment engine work. Document those IPIs in the engine work folder. IPIs will be reviewed for applicability annually.

**1.12. Test, Measurement, and Diagnostic Equipment (TMDE).** The Logistics Group (LG) designates a Test, Measurement, and Diagnostic, Equipment (TMDE) coordinator for liaison between the unit and the servicing TMDE laboratory. Local directives will be published to ensure that unit TMDE is controlled, calibrated, repaired, and certified in accordance with (IAW) prescribed directives. A host tenant agreement with the servicing Precision Measurement Equipment Laboratory (PMEL) will be accomplished when required. Where an ANG Type II is assigned, the appropriate commander will ensure the PMEL conforms to the provisions outlined in T.O. 00-20-14, *Air Force Metrology and Calibration (AFMETCAL) Program*. ANG flying units may request authorization from AFMETCAL Det 1 to support their own torque wrenches, by submitting a waiver package through ANG/LGMM, PMEL Functional Area Manager (FAM) with all supporting data IAW T.O. 00-20-14. Calibration responsibility waivers will be considered for torque wrenches only. Fighter/bomber units will assign the torque wrench calibration function to the Avionics Intermediate Shop (AIS)/Intermediate Automated Test Station (IATS) and airlift/tanker units will assign it to the Avionics Guidance and Control shop.

**1.13. Reliability and Maintainability (R&M).** R&M is a mindset, and through it Mean Time Between Failures (MTBF) can be vastly extended. This greatly reduces manpower requirements and vastly improves combat capability. It is the responsibility of all maintenance personnel at all levels to identify deficiencies in current equipment and known future acquisitions to affect workable engineering changes in order to meet this goal. There are many vehicles to effect these changes through on-line quality programs.

**1.14. Automated Data Systems (ADS).** The Core Automated Maintenance System/Reliability and Maintainability Information System (CAMS/REMIS) is the Air Force approved automated system for aircraft maintenance. Maintenance Information Systems specifically designed for certain weapons systems can be used in lieu of Core Automated Maintenance System (CAMS). Nothing in this paragraph precludes units from developing and using local automated programs to enhance the data collection effort.

**1.15. Munitions Accountable Systems Officer (MASO).** The assistant USP&FO officer will be the MASO.

1.15.1. MASOs will develop and implement a self-inspection program using the ANG Compliance and Standardization Requirements Listing (C&SRL) for munitions accounts.

1.15.2. MASOs will appoint TCTO monitors to ensure MASO managed munitions components for TCTO kits are requisitioned and follow-ups are performed until kits are received.

1.15.3. MASO will establish their WRM munitions manager account and include tactical missile and mobility munitions.

1.15.4. MASOs will review AFI 21-201 Chapter 2 semi-annually and all other chapters for clarity of responsibilities between sections annually and document compliance.



**1.16. NGB Technical Support, Single Point Of Contact (SPOC), and Advisory Committees/Teams.**

When established, the purpose of the advisory committee/team is to augment and advise ANG/LGM staff personnel and is also responsible to the respective weapon system or Logistics council. A committee/team must be sanctioned by the ANG in order for it to be recognized. The need to form a team or SPOC will be initiated by ANG/LGM or the various weapon system councils. Appointment to the team will be by recommendation through the individuals LG to the weapons system council president for approval and to the respective ANG functional OPR for appointment. Team/SPOC members may be removed by recommendations from the respective weapon system council to the ANG/LGM OPR for approval. Notification of the team/SPOC members to the field will be by message or E-mail. Duties of the team/SPOC include, but are not limited to:

- 1.16.1. Act as the functional expert for specific aircraft maintenance related issues.
- 1.16.2. Coordinate with all other agencies/units as required to establish a consensus on issues.
- 1.16.3. Provide technical guidance on specific areas of expertise.
- 1.16.4. Provide technical assistance to the ANG and respective weapon system council for policy creation.
- 1.16.5. Execute specific technical tasks as assigned IAW existing ANG policy.
- 1.16.6. Attend meetings pertaining to assigned subjects.
- 1.16.7. Maintain close communications with ANG functional OPR.
- 1.16.8. Provide trip reports, point papers, background papers, and general information when required.
- 1.16.9. Provide updates to units.
- 1.16.10. Generate informational/tasking message, as required, after coordination with ANG functional OPR.
- 1.16.11. SPOCs will not set policy.

**1.17. Maintenance Self-Assessment Program.** Maintenance activities develop their own maintenance self-inspection program, providing flexibility to evaluate maintenance processes as required. ANG Compliance and Standardization Requirements Lists (C&SRLs) will be used as a minimum to establish the program. Unit level measures collected under this program will be provided to Quality Assurance for validation (to be determined by the LG, stating a minimum percentage of items on each C&SRL, comparison, and inclusion in the Quality Assessment Program (QAP).

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**Chapter 2****ORGANIZATION AND RESPONSIBILITIES**

**2.1. Maintenance Organization.** ANG maintenance activities are organized by the various organizational structure codes on the manning document for that particular weapon or support system. Work centers are staffed consistent with mission requirements, workload, and available personnel. Units are encouraged to consolidate functions when warranted to streamline operations and enhance mission readiness. During non-mobilized operations, ANG units are not manned or structured to adopt all gaining command maintenance management policies and procedures. When the gaining command utilizes a different maintenance management program, the LG ensures management personnel are aware of that program to permit the unit to be incorporated into the gaining command management structure upon federalization.

**2.2. Aircraft Generation Squadron (AGS).** AGS is the direct sortie producing function. This unit is primarily an on-equipment maintenance organization, which possesses the people, aircraft, and equipment to meet sortie requirements.

**2.3. Maintenance Squadron (MXS).** Providing support to AGS sortie production, the MXS also provides the depth to sustain maintenance effectiveness.

**2.4. Quality Assurance (QA).** Responsible to the LG, QA makes recommendations to enhance maintenance quality. As the primary technical advisory agency for Maintenance, it serves to assist supervisors and commanders in establishing quality maintenance programs.

**2.5. Wing Weapons Manager (WWM).** When assigned, WWM is a staff function responsible to the LG. This function acts as the focal point for all weapons loading and armament system related matters. This function works closely and managerially efficiently with the AGS Weapon NCOICs.

**2.6. Logistics Support Flight (LSF).** Responsible to the LG, LSF manages staff-related functions required for the efficient operation of aircraft maintenance.

**2.7. Logistics Group Commander (LG).** The LG is responsible for the total production effort and management of all functions required to accomplish sortie production and the unit mission. The LG will:

2.7.1. Ensure that performed maintenance is of the highest quality and accomplished in a timely manner.  
2.7.2. Ensure maintenance training is accomplished throughout the unit and training backlogs are held to a minimum.

2.7.3. Ensure maintenance capability is considered in the development of the flying program. Long term balance between maintenance capability and operational requirements is essential.

2.7.4. Delegate the necessary authority for support and production activities to perform assigned tasks.

2.7.5. Monitor the assignment and use of all maintenance personnel to ensure equitable distribution of skilled people. Ensure all personnel assigned to Maintenance are used to accomplish critical wartime tasks before releasing them for non-maintenance duties.

2.7.6. Control assignment of group facilities. Ensure necessary documents for new construction and modifications are submitted.

2.7.7. Establish an effective vehicle control program.

2.7.8. Provide for management of the financial program.

2.7.9. Develop an impoundment program.

2.7.10. Establish written guidance on individual responsibilities and specific procedures for cannibalization actions.

2.7.11. Act as the approval authority for "all systems" Red X and/or In-Process Inspection (IPI) certifications.

2.7.12. Sign the Special Certification Roster (SCR).

2.7.13. Establish a unit FOD/lost object program.

2.7.14. Establish a unit Oil Analysis Program (OAP), when required.

2.7.15. Assigns a manager for the engine-run, qualification/certification program IAW AFI 11-218, *Aircraft Operation and Movement on the Ground*.

2.7.16. Ensures Red Ball procedures (if used) have been established and written in an LOI.

2.7.17. Request process reviews for areas demonstrating trends not conducive to quality maintenance.

2.7.18. Assume responsibility for Contract Engineering Technical Services (CETS) personnel.

2.7.19. When required, appoints a Wing Weapons Manager (WWM). . The LG appoints a WWM, who is the most qualified 2W1XX and is the functional manager for AFSC 2W1X1. In cases where the function is not represented by full time personnel, the LG will appoint a full time representative.

2.7.20. Ensures a Crash Recovery and Reclamation Program is established.

2.7.21. Ensures strict adherence to technical data and management procedures.

2.7.22. Supports Wing Safety programs and ensures safe maintenance procedures are adhered to.

2.7.23. Ensures no maintenance is performed by personnel who are not properly trained and certified, unless under the direct supervision of a trainer or certifier.

2.7.24. Ensures that anyone performing maintenance utilizes an AF Form 623 and Career Field Education and Training Plan (CFETP) or automated training products to provide a record of qualification, regardless of military rank or civilian grade.

2.7.25. Ensures a Data Integrity Team/s (DIT) is established. All units will establish a DIT and report on the monthly 7401 report. These are teams established to evaluate/isolate/eliminate documentation problems and errors. Database Manager (CAMS or GO81) is the OPR for the team. It should include at least one representative from PS&D, EMF, CRF, AGS, and QA. Representatives should be at least 5-levels and be familiar with the unit's assigned weapon systems.

2.7.26. Ensures that QA has access to JEDMICS and a primary and alternate POC has been assigned and identified to the ANG program manager for unit coordination.

2.7.27. Ensure procedures for controlling, securing, redistribution, and destruction of engineering drawings have been established and written in an LOI.

2.7.28. Publish an LOI to establish reconciliation procedures IAW AFI 21-201.

**2.8. Squadron/Flight Commander.** The Commander is responsible to the LG and may be assisted by one or more individuals for overall squadron/flight management. They play a pivotal role in the unit's effort to improve maintenance quality. They must ensure supervisors and personnel participate in reviewing maintenance processes. Without aggressive involvement from maintenance supervision, the unit quality assessment program will not be effective. The Squadron/Flight Commander:

2.8.1. Ensures strict adherence to technical data and management procedures.

2.8.2. Works with QA to facilitate process reviews.

2.8.3. Review corrective actions recommended for problems detected as a result of process reviews.

2.8.4. Recommend areas for process reviews to Quality Assurance.

2.8.5. Implements and manages Maintenance Self-Assessment, retention and career motivation, security, and mobility programs, as applicable.

2.8.6. Administers the Squadron Safety Program. Coordinates with the Squadron Safety Monitor and flights to ensure all personnel obtain the required safety training. Ensures safety information is available. Identifies requirements to the bioenvironmental engineers, ensuring facilities meet industrial environmental standards. Ensures compliance with Air Force 91- and 127- series safety directives, appropriate Air Force Occupational Safety and Health Standards (AFOSH STD), and applicable industrial safety publications.

2.8.7. Ensures personnel authorized and assigned are adequate and trained to support the unit mission and tasking plans. Recommends adjustments as required.

2.8.8. Enforces sound maintenance, supply discipline, and financial management practices.

2.8.9. Establishes procedures to control repair cycle assets according to T.O. 00-20-3, *Maintenance Processing of Repairable Property and the Repair Cycle Asset Control System*.

2.8.10. Reviews the D23 and other pertinent supply products to ensure proper asset management.

2.8.11. Ensures reporting of material deficiencies according to T.O. 00-35D-54, *USAF Material Deficiency Reporting and Investigating System*.

2.8.12. Reviews emergency war order, mobility, contingency, and exercise plans affecting the unit. Ensures appropriate measures are prescribed to meet unit responsibilities.

2.8.13. Ensures adequacy of squadron training, maintenance qualification, and assessment programs.

2.8.14. Monitors new requirements for training, equipment authorizations, special tools, workspace, facilities, and manning.

2.8.15. Ensures upgrade training and maintenance qualification programs emphasize quality and are not primarily focused on meeting minimum upgrade time frames.

2.8.16. Ensures collection of unit level measures data and the Maintenance Self-Assessment program.

2.8.17. Has a working knowledge of automated maintenance information systems and ensures their use.

2.8.18. Ensures records required by this publication and other governing directives are maintained.

2.8.19. Ensures functional publication libraries are established and maintained.

2.8.20. Designates a unit deployment manager.

2.8.21. Establishes procedures to minimize foreign object damage and dropped objects.

2.8.22. Approves personnel to perform production inspections. These individuals are specifically authorized to verify the condition of equipment or the proper accomplishment of maintenance.

Individuals authorized to sign off Red X conditions, perform IPIs, sign condition tags, or Not Repairable This Station (NRTS) items are all considered production inspectors. A production inspector may be authorized to perform any or all of the above tasks; however, authorization to perform each task must be separately identified.

2.8.22.1. NCOs with a seven or higher skill level may be authorized as production inspectors. Selected five-level personnel in the rank of SRA or higher, may be authorized as production inspectors when the Squadron Commander waives the seven-skill level requirement. Waived five-level personnel may act as production inspectors only in their primary AFSC. The number of waived 5-skill level personnel should be closely monitored and kept to the minimum required to accomplish the maintenance mission. Seven-level personnel may be authorized as production inspectors outside their primary AFSC only when specific Cross Utilization Training (CUT) task qualification is documented.

2.8.22.2. Only at the LGs option, maintenance officers and senior NCOs may clear "all systems" Red X conditions and perform "all systems" IPIs, except on those systems which have specific task certifications required (i.e., egress, munitions, welding). "All systems" Red X and/or IPI authorizations are tracked in ADS. In addition, the LG may appoint officers and NCOs to downgrade Red Xs.

2.8.22.3. The Special Certification Roster (SCR) maintained by Training Management is a listing of personnel authorized to perform, evaluate, and/or inspect critical work. Include the following minimum tasks on the SCR: clear Red X primary AFSC, perform IPI primary AFSC, clear Red X CUT AFSC, perform IPI CUT AFSC, (for CUT, list by each AFSC in which the individual is authorized to clear Red X or perform IPI, e.g., clear Red X Pneu, clear Red X Electronics), sign condition tags, authorize NRTS, sign exceptional release, authorize engine run (engine run may be subdivided into various power settings), hot refueling by position, and test cell operator. The LG may add other critical tasks or inspections as deemed necessary.

2.8.22.4. The work center supervisor recommends adding an individual to the SCR (thru his/her chain of command) by reviewing appropriate training documentation and experience on the assigned Mission Design Series (MDS). The QA Supt. reviews and certifies the request for currency, qualification and applicability and forwards to the LG. Once approved by the LG, the individual is authorized to perform the tasks indicated. The work center supervisor is authorized to remove individuals from the SCR.

2.8.22.5. Identify each task on the SCR by a specific course code. Civilian personnel may be approved as production inspectors based on their experience and technical expertise regardless of their assigned duty skill level position.

2.8.22.6. Ensures a current copy of the SCR is available for all deployments.

2.8.23. Perform functions as out-lined by AFI 21-201.

**2.9. Flight Supervisor.** The Flight Supervisor is responsible to the squadron commander for maintenance production. The flight supervisor, who may be assisted by one or more individuals, controls maintenance processes and the people contributing to those processes. Their involvement in process reviews is critical to ensure any proposed change is understood and viable. Flight Supervisors ensure their personnel understand the purpose of the unit's assessment programs and provide necessary support. The flight supervisor:

2.9.1. Enforces the use of technical data. Ensures T.O. files are current and maintained according to T.O. 00-5-2, *Technical Order Distribution System*.

2.9.2. Ensures personnel are trained and qualified to perform assigned tasks and motivated to perform quality maintenance.

2.9.3. Monitors work force availability by ensuring shift scheduling, additional duties, ancillary training, and work details to provide maximum capability and minimize work force degradation.

- 2.9.4. Ensures timely accomplishment of delayed discrepancies, Pilot Reported Discrepancies (PRD), and aggressive follow-up of back ordered parts. Periodically reviews on-line products to ensure PRDs and maintenance actions are entered and completed.
- 2.9.5. Helps prepare and execute all plans, including support plans/checklists for contingency taskings involving the flight. Reviews plans and ensures maintenance personnel understand and have the resources to perform their part of the plans.
- 2.9.6. Advises the Maintenance Operations Center (MOC) of conditions, which may disrupt the orderly and controlled execution of maintenance production.
- 2.9.7. Ensures their maintenance function is capable of meeting its mobility tasking.
- 2.9.8. Reviews and evaluates management, production, and Quality Assurance (QA) reports. Initiates management actions to meet new workloads or correct reported deficiencies.
- 2.9.9. Ensures repairable parts are promptly processed through repair channels.
- 2.9.10. Ensures procedures for identifying, recording, and clearing repeat, recurring, and Cannot Duplicate (CND) discrepancies are understood and followed.
- 2.9.11. Closely monitors aircraft during impoundments.
- 2.9.12. Ensures all supervisors have access to directives governing their areas of responsibility.
- 2.9.13. Controls and issues inspector stamps (when used) for personnel assigned to work centers within their control. At LG option the stamps may be controlled by QA.
- 2.9.14. Provide personnel to participate in process reviews.
- 2.9.15. Ensure collection of data for unit level measures.
- 2.9.16. Implement process review corrective actions.
- 2.9.17. Review processes and unit level measures to identify potential problems. If problems exist the Flight Chief notifies the Squadron Maintenance Officer or Maintenance Supervisor and recommends corrective actions.
- 2.9.18. Ensures aircraft forms entries and ADS are completed, accurate and accomplished in a timely manner.
- 2.9.19. Maintains a copy of the SCR for the flight.

**2.10. Element/Work Center Supervisor.** The responsibility for the management, supervision, and training of assigned personnel rests with the Element/Work Center Supervisor. The leadership, technical skill, and supervisory ability of the element/work center supervisors are key in the development and application of combat capability. Depending upon the organizational structure of the assigned weapons system, it may be necessary to assign the following responsibilities to one or more supervisors/small shop chiefs as deemed most appropriate. These selected supervisors/small shop chiefs:

- 2.10.1. Coordinate the work shift schedule to ensure sufficient people are available to support the mission. Monitor shift manning and make necessary adjustments.
- 2.10.2. Ensure operator inspections and user servicing requirements are accomplished on assigned support equipment.
- 2.10.3. Ensure the corrosion control program is implemented and properly managed.
- 2.10.4. Select qualified personnel to perform production inspections and forward names to the flight supervisor for coordination and squadron commander for approval.
- 2.10.5. Review IPI requirements listing at least annually and forward changes/comments to flight supervisor for coordination and QA for approval.
- 2.10.6. Review QA and other reports to determine if adequate management actions have been taken to fix discrepancies and identify root causes. Evaluate production and equipment performance to identify deficient areas and initiate corrective action. Evaluate the quality of maintenance and qualifications of personnel through observation and inspection of maintenance actions.
- 2.10.7. Establish requirements for vehicles and support equipment and ensure procedures for operation and maintenance are enforced.

- 2.10.8. Ensure repairable parts are promptly processed through repair channels. Schedule and control all repair cycle assets through the repair work centers based on priorities established in Table 3-1 and not necessarily the oldest document number.
- 2.10.9. Ensure personnel and equipment are identified and prepared to meet mobility tasking.
- 2.10.10. Monitor Consolidated Tool Kits (CTK), special tool needs, and support equipment use. Manage tool storage and bench stock. Ensure adequate CTKs, special tools, and support equipment are available and calibrated as required.
- 2.10.11. Administer the safety program. Ensure all personnel obtain the required safety training. Ensure safety information is available. Monitor and ensure environmental health physicals and respirator training are accomplished for assigned personnel, when required.
- 2.10.12. Ensure a record of inspection, lubrication, and maintenance is maintained for all assigned industrial equipment.
- 2.10.13. Ensure procedures are followed to identify, record, and clear repeat, recurring, and CND discrepancies.
- 2.10.14. Ensure effective personnel training programs are instituted. Evaluate skills, aptitudes, and proficiency of assigned people to develop work center training requirements. Ensure CUT requirements are identified as required by the unit mission. The training provided should be to the degree that personnel can work with little or no assistance. Caution must be used in determining peacetime CUT requirements to ensure that the units' combat capability is not degraded. CUT should not interfere with upgrade training or the qualification training of individuals who are not qualified on the assigned weapon system. CUT is initially documented by the supervisor on an AF Form 797, **Job Qualification Standard Continuation/Command (JQS)**, and filed in the member's AF Form 623, **On-the-Job Training Record**.
- 2.10.15. Monitor support equipment status and advise maintenance supervision of adverse impacts on production support or deployment capabilities.
- 2.10.16. Enforce the use of technical data. Ensure T.O. files are current and maintained IAW T.O. 00-5-2.
- 2.10.17. Review new, revised, or changed publications and inform personnel of any significant changes. Decide whether or not new or changed publications would affect the qualifications of personnel. Ensure work center publications are current and required publications are available to meet work center needs.
- 2.10.18. Identify items requiring functional checks, calibration, or operational flight programming before installation. Provide a list of these items for distribution to Supply and Maintenance.
- 2.10.19. Maintain housekeeping, safety, security, and environmental standards.
- 2.10.20. Maintain AF Forms 2413, **Supply Control Log**, or AF Forms 2005, **Issue/Turn-in Request**, recording all parts ordered from base supply demand processing. Verify status with the Daily Document Register (D04) and the Monthly Due-Out Validation Listing (M30). Use printouts of requests made via the supply interface in lieu of AF Forms 2005 and 2413. On receipt of parts, discard AF Form 2005 or place in an inactive file.
- 2.10.21. Monitor and correct REMIS errors.
- 2.10.22. Ensure aircraft form entries and ADS are completed, accurate and accomplished in a timely manner.
- 2.10.23. Maintain master equipment ID number lists when required.
- 2.10.24. Solicit inputs and promote the Product Improvement and Reliability and Maintainability (R&M) Programs as outlined in T.O. 00-35D-54.
- 2.10.25. Ensure the establishment of a precious metal recovery program, if required.
- 2.10.26. Ensure the training of and annual recertifying of crash recovery team personnel.
- 2.10.27. Ensure TMDE that is overdue calibration, is not used without ANG/LGM approval for calibration extension.

**2.11. Decentralized Maintenance Supply Support.** Within the ANG, maintenance supply support is obtained from the Combat Supply Support for Maintenance (CSSM) section under the Chief of Supply. Detailed procedures for the management of CSSM is outlined in AFMAN 23-110, *Standard Base Supply Customer's Procedures*, volume 2, part 2 and part 13. The procedures outlined below provide general responsibilities to maintenance personnel regarding their role in obtaining needed supplies to maintain combat ready aircraft.

2.11.1. Supply discipline is essential for effective material management. All maintenance personnel must be trained to effectively perform supply duties related to their job. Maintenance personnel must understand:

2.11.1.1. That a repairable item is as important as a serviceable item, since the repairable item may be the only part available. Therefore, promptly process repairable items.

2.11.1.2. The procedure to assign a valid delivery priority to each demand which is placed on the supply system. Everyone shares the responsibility for maintaining an effective and credible priority system.

2.11.1.3. The procedure to cancel both erroneous requests and those that are no longer required.

2.11.1.4. The proper use of the Urgency Justification Code (UJC) on parts requests, to designate the impact and type of need. The Urgency of Need Designator (UND) is the first position of the UJC and indicates the impact of the request. The use of the following UNDs: 1, J, and A are restricted and must be verified by the pro super, expeditor or as designated by the LG.

2.11.1.5. Using the current Force Activity Designator (FAD). The FAD is assigned to each Air Force unit based on its mission and is found in the USAF Program Document. This code is used with the UND to set the requisition priority when a part is ordered from off-base sources. When a unit needs an item that is in direct support of a unit with a higher FAD, the requester provides the FAD of the supported unit at the time the demand is placed.

2.11.1.6. Verifying and monitoring back-ordered requests. Submit requests for supply assistance if status is determined to be unacceptable.

2.11.1.7. Making priority demands through CSSM or directly through computer terminals for units using Automated Maintenance System/Supply interface. Routine demands are normally processed using an AF Form 2005, or the maintenance/supply interface. The AF Form 2413 or locally developed printouts are used to verify requests.

2.11.1.8. The requirement to recycle reusable containers and metals.

2.11.1.9. The procedure to turn in excess material.

2.11.1.10. Recording the usage of an item in the supply system by processing Turn Arounds (TRN). If the removal and replacement of an item is not processed in supply, it may never be stocked or may be under-stocked.

2.11.1.11. That Due In From Maintenance (DIFM) inputs are critical to recording and getting credit for proper repair-cycle times. Currently, DIFM status codes are subdivided into three categories: delayed maintenance time, repair time, and Awaiting Parts (AWP) time. Repair time is the only time that is recorded and used to determine the number of assets that base supply can stock. If the proper codes are not used and if these codes are changed, the resulting effect is a reduction of the number of assets on base. Additionally, since credit is not given for delayed maintenance time or Awaiting Parts (AWP)-time, these errors should be reduced to as near zero as possible.

2.11.2. **Repair Cycle Asset Management.** The overall objective of repair cycle management is to prioritize repair of assets based on actual mission needs, to move assets through the repair cycle as quickly as possible, to accomplish quality repair actions, and to maximize repair capability. A poorly managed repair cycle asset system can severely impact the financial condition of a flying unit. The repair work centers establish a production schedule based on the priorities in Table 3-1 and manage the flow of DIFM assets in the repair cycle. Process repair cycle assets according to T.O. 00-20-3. Units establish local procedures for the control of repair cycle assets throughout the maintenance cycle. Include methods of accounting for all components and accessories; procedures for control of assets in AWP or Awaiting Maintenance (AWM) status; and procedures and responsibilities for the following: cross cannibalization, removal of bits and pieces, and scheduling and control of repair cycle assets. Promptly process, repair, and return repairable components to the repair cycle support element. Repair assets to the fullest extent authorized within unit capabilities.

2.11.3. **Control of Awaiting Parts (AWP) Assets.** Repair work centers are responsible for storing and controlling AWP repairable assets. The Chief of Supply (COS) is responsible for the requisitioning, lateral support, follow-up, and monitoring the status of repair bits and pieces. Repair work centers are responsible for documenting and conveying impacts to the Base Supply AWP manager if the status is unacceptable.

2.11.4. **Removal of Bit and Piece Repair Parts from Condemned Assets.** Remove selected bit and piece repair parts from condemned Expendable, Field/Expendable, Base (XF/XB) end items. Do not remove bit and piece repair parts from Expendable Depot (XD) assets returning to the depot without item manager approval. Condemnation authority for XD assets is provided by the end item manager. Once condemnation authority for a XD asset is received from the item manager, remove all serviceable and reparable XD Shop Replaceable Units (SRU). Bench check all XD SRUs and process all serviceables for turn-in to base supply as "found on base." Determine if the unserviceable XD SRUs repair cost exceeds 75 percent. If repair exceeds 75 percent of cost, reinstall the SRU into the condemned Line Replaceable Unit (LRU) and turn-in the LRU to base supply through the normal due-in from maintenance (DIFM) process. Also, remove serviceable bit and piece parts. Store XB bits and pieces as operating stock or turn-into supply.

2.11.5. **Local Manufacture.** Units publish directives outlining procedures covering the manufacture of items source coded local manufacture. Include procedures that prevent abuses, specify coordination requirements and approval authority. Local manufacturing is an essential part of unit maintenance support. The applicable end-item T.O. identifies items subject to local manufacture. Specific procedures are in AFMAN 23-110, volume 2, part 2, and part 13. When developing directives:

2.11.5.1. The LG or designated representative will be the approval authority for local manufacture requests. Requests are routed through QA, prior to submission to the LG.

2.11.5.2. Requesters use an AF Form 2005 for supply item local requests. Use an AF Form 601, **Equipment Action Request**, for equipment requests. Provide a drawing, a sample, technical data and DD Form 1348-6, as required. Obtain drawings from the Base Engineering Data Service Center (EDSC). Use the Air Force engineering data program governed by AFI 21-401, *Engineering Data Distribution and Controls*.

2.11.5.3. Requesters coordinate with the appropriate fabricating section to determine the bits and pieces required to manufacture the item. The supply local manufacturer manager assists in verifying parts availability.

2.11.5.4. Requesters identify all sections that have action on the AFTO Form 350, **Repairable Item Processing Tag**, for items requiring multiple-section processing.

2.11.6. **Bench Stock, Operating/Shop Stock.** Several types of supply assets may be kept in the work center:



2.11.6.1. Bench stocks reduce delays and are set up as a joint effort by Maintenance and Supply. Items coded Time Compliance Technical Order (TCTO), unacceptable for Air Force use, critical, classified, or sensitive are not included. Bench stocks normally do not exceed 60 days expected usage except when larger unit packages are involved or when Minimum Required Authorizations (MRA) or Minimum Authorized Quantities (MAQ) have been set. When the unit of issue is a multiple quantity, such as a box of nuts or bolts; the unit of issue is issued. Bench stocks can be open to users. The work center supervisor is responsible for housekeeping, discipline, and supervision of the work center bench stock program. Consider joining the bench stock with an existing tool room. Bench stock items may be authorized in toolboxes or CTKs. The LG publishes an LOI, which lists those items and the quantities that may be in toolboxes or CTKs.

2.11.6.2. Managing Bins:

2.11.6.2.1. Mark bins containing 50 percent or less of the authorized quantity to facilitate monthly inventories.

2.11.6.2.2. Control and secure any precious metals displayed.

2.11.6.2.3. Bench stock items, which are not in their original package, should be organized and marked to avoid mistakes.

2.11.6.2.4. Remove unidentifiable items, or items whose serviceability is unknown, from bench stock bins and process them as shop scrap through the Defense Reutilization and Marketing Office (DRMO).

2.11.6.2.5. Establish fixed or mobile bench stocks to provide quick and easy access to bits and pieces needed to support maintenance efforts. Ensure mobile bench stocks do not present a foreign object damage hazard.

2.11.6.2.6. Bench stock shadow boards are optional. Every effort should be made to use unserviceable items for shadow boards.

2.11.6.2.7. Coordinate with the Hazmart on the control, issue and turn-in of hazardous materiel/items on bench stock listings. See AFMAN 23-110, volume 2, part 2, and part 13 for additional guidance on establishing, maintaining, and reviewing bench stocks.

2.11.7. Operating/Shop Stocks. Operating or shop stocks are any expendable bits and pieces not meeting the criteria of bench stock and needed to support the maintenance work schedule. Examples of operating or shop stocks include: random length barstock, fabric, dust covers, caps, plugs, nuts, bolts, screws, rivets, etc. Also included are items left over from work orders/TCTOs, items deleted from bench stock, and items that are recovered after use and are reused. These items may be stored in or near the bench stock but are not commingled. Bin labels include National Stock Number (NSN) or part number, unit of issue, noun, and shelf life. Highlight shelf life and precious metal items the same as bench stock. Items are controlled and monitored to avoid ordering assets already on hand and becoming excessive or outdated. Partially used bench stock items are retained on bench stock and not placed in operating/shop stock. Identify, tag, and turn in items with no forecasted future use.

2.11.8. Shelf-Life Items. Work Centers control shelf-life items in bench stock and operating/shop stock according to AFMAN 23-110, volume 7, part 3. Base supply identifies shelf life items by use of colored bin labels. This label contains the item's shelf life code (AFMAN 23-110, volume 2, part two). Mark operating and shop stock labels with the shelf-life codes and source (e.g. T.O. number, etc.). Contact the base supply inspection section to determine the shelf-life if conflicts occur between the various sources. Check expiration dates on issued items and do not accept outdated items from supply. Do not open shelf-life containers until needed and use the oldest items first. Recycle, reclaim, or turn-in for disposal, shelf-life items which are loose in the bin and the expiration date cannot be determined according to type I shelf-life criteria. Inspect type II shelf-life items according to applicable technical data.

2.11.9. Special (Adjusted) Stock Levels. Use AF Form 1996, **Special Adjusted Stock Level, Version 1**, to establish supply levels to support special projects or special operating requirements; or, if existing demand data is insufficient to support mission requirements. A single occurrence of a mission-limiting status is not sufficient reason to establish an adjusted stock level but may be an indicator to review demand data for accuracy. Work Centers, with assistance from supply, prepare AF Forms 1996 and route this form through maintenance supervision for review. Specific procedures for obtaining adjusted levels are contained in AFMAN 23-110, Vol. 2, Part 2, Chapter 19. Prior to submission to base supply; ensure AF Forms 1996 contains adequate justification and submit to the LG for approval. Supply maintains a master file of adjusted stock level and follow-up requests. Supply and the appropriate work center accomplish a validation of adjusted stock levels every two years IAW AFMAN 23-110, Vol. 2, Part 2, Chapter 19.

2.11.10. Tail Number Bins (TNB). Place all Due-Out Release (DOR) items in the TNB and inform the maintenance coordination function and expeditor, for Mission Capability (MICAP) or the flying squadron PS&D (for backordered items) that the part is in. Do not release parts from the TNB without proper documentation. Return items removed from the TNB that are not installed that duty day. Inform the production superintendent or expeditor of TNB assets, which may prevent or satisfy a mission-limiting condition. TNB items used to satisfy MICAP conditions are not cannibalizations. Reorder these items and notify the expeditor of the new document number. Update the aircraft forms and automated maintenance system. If supply creates a due-out prior to transfer of these items, notify base supply to change the "mark-for" field on the due-out detail. Seal and store partially completed TCTO kits and parts in the TNB and mark the container or package with the tail number, serial number, or equipment identification number and TCTO number. Maintain security and control of TNB assets. Track property placed in the TNB by tail number, serial number, or equipment identification number. For each entry indicate:

2.11.10.1. Date received.

2.11.10.2. Noun.

2.11.10.3. Document number.

2.11.10.4. Status (facilitate other maintenance (FOM), ISU/DOR, TCTO, etc.)

2.11.10.5. Removal information: date, time, signature, and employee number of the person who picked up the property.

2.11.10.6. Remarks.

2.11.11. Economic Order Quantity (EOQ/XB3) Turn-In. Place EOQ/XB3 pick-up point containers in or near each maintenance work center to encourage turn-in of unneeded items. Make the containers easily accessible and visible. Work Center supervisors periodically inspect containers for unauthorized items. AFMAN 23-110, volume 2, part 2, contains detailed procedures.

2.11.12. Special Purpose Recoverables. Authorized Maintenance Spares (SPRAMS). SPRAMS assets are fault-isolation spares, shop-standard spares, training spares, -21 Technical Order (T.O.) spares (alternate-mission equipment), test-station spares, and stand-alone spares. These assets are XD/XF items, which are controlled and managed as in-use supplies. A SPRAMS monitor and custodian are appointed by the Squadron/Flight Commander to manage these assets.

2.11.13. Equipment Items. Continually review equipment items needed for mission accomplishment. Maintain them in a serviceable condition. Supply personnel provide technical assistance to equipment custodians by researching and preparing documents for gaining authorizations and ordering equipment items. Equipment custodians request equipment, tools and bench mock-ups using AF Form 601, or AF Form 2005. Supply provides equipment custodians a Custodian Authorization and Custody Receipt Listing (CA/CRL) of all authorized and in-use equipment for each account. Check the appropriate Allowance Standard (AS) for authorizations. See AFMAN 23-110, volume 2, part 13; for procedures on appointing equipment custodians; establishing the proper accounts; ordering and maintaining equipment items.

2.11.14. Supply Assets Requiring Functional Check, Calibration, or Operational Flight Programming. Maintenance sections identify items requiring functional check, calibration, or operational flight programming prior to use. Work Center/Element Supervisors prepare a list of items, including the repair section's organization and section code, and send the list to base supply's inspection section. The list is updated/validated semiannually. Supply sends items identified on the list to repair sections when functional check, calibration or programming is due or when serviceability is doubtful.

2.11.15. Supply Points. Establish supply points within individual work centers when time or resources required to move items dictate a need. Storage space for the supply points is provided by the supported work center. Determine management of the supply point by agreement between maintenance and supply. Inventory supply point assets, semi-annually. The work center supervisor assists base supply with these reconciliation's and inventories. Establishment of an aircraft parts store and/or flight service center within the maintenance complex reduces the dependence on supply points and or bench stocks. Supply maintains warehouses in both of these facilities, stocking assets closer to the point of use. Expenditure of funds and manpower may be reduced by use of these facilities.

2.11.16. Buildup Items. Maintain items requiring build-up prior to use (i.e. wheels and tires) in supply points in a built-up configuration. Send items to appropriate work centers for build-up and return them to the supply point for later issue. Use AF Form 1297, **Temporary Issue Receipt**, to control assets sent for build-up when the supply point is operated by supply. Validate AF Forms 1297 daily if over 10 days old. Establish local procedures to control assets when maintenance operates the supply point and assets are sent to another organization for build-up.

2.11.17. Supply Reports and Listings. Use supply reports and listings to manage maintenance requirements. Most are provided automatically or generated after supply transactions. Request others when needed.

2.11.18. Quick Reference Lists (QRL). QRLs are developed in coordination with Maintenance and Supply to provide a quick way to identify and communicate to Supply the need for a part. QRLs should only identify those fast-moving high usage assets for aircraft. Review and validation are accomplished as required, but at least semiannually. Maintenance activities submit proposed additions to the QRL by stock and part number, work unit code, and technical order, figure and index number. Print the listing by primary air vehicle system using a user-determined format.

**2.12. Operations Group Commander (OG).** The OG is responsible for the Operations portion of the FCF (Functional Check Flight) program. The OG will also assign a Mode IV Manager to coordinate with Avionics to ensure Mode IV system operability and to ensure testing and documenting procedures are followed. Additionally, OG will ensure the Operations Group portion of the FOD, Lost Object, Life Support Time Change, and CTK Programs are implemented and properly managed. The OG is also responsible for Survival Equipment functions under the Full Time Manning document. This function is located in Operations on the Full Time manning document and located in Logistics on the Military manning document. Regardless of location, the responsibilities remain the same and are subject to QA technical assistance and evaluations.

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## Chapter 3

### LOGISTICS SUPPORT FLIGHT (LSF)

**3.1. General.** The Logistics Support Flight (LSF) is responsible to the LG for aircraft maintenance staff functions required for the efficient operation of the Logistics Group. This flight normally includes the Maintenance Operations Center (MOC), Plans, Scheduling, and Documentation (PS&D), Comprehensive Engine Management (CEMS), Training Management, Maintenance Analysis, and Maintenance Plans and Programs.

**3.2. Maintenance Operations Center (MOC).** The main function of the MOC is to monitor and coordinate the production effort. The MOC monitors the implementation of the flying schedule as well as scheduled and unscheduled maintenance. Command and control are different for internal and external conditions and states of readiness. Internal control is exercised when the resources are all in a single squadron. The squadrons set priorities for their respective production efforts to meet mission requirements. The MOC does not exercise internal control. The MOC exercises external control when more than one squadron is involved or when squadrons must share resources or facilities. The MOC establishes priorities for items such as hangar space, wash racks, and for dispatched specialists from the Maintenance Squadron (MXS), (e.g., egress). The exchange of information between squadrons and the MOC must be in sufficient detail to allow the MOC to comply with reporting requirements and to identify potential problem areas. During periods of contingency tasking, simulated or actual, the MOC may assume increased responsibility for the coordinating effort. Command and control, as exercised by the battle staff through the MOC, concerns all maintenance actions, which facilitate and expedite the production effort. In general, responsibilities are:

- 3.2.1. Maintains the status, expected time in commission (ETIC), and location of each aircraft on station, which is either maintained or supported.
- 3.2.2. Manages the aircraft maintenance non-tactical radio program.
- 3.2.3. Ensures aircraft status is properly reported and maintained.
- 3.2.4. Coordinates and monitors the progress of aircraft Functional Check Flight (FCF) as established by QA and PS&D.
- 3.2.5. Informs affected activities of changes in priorities, plans, and schedules.
- 3.2.6. Coordinates changes on weekly/daily flying schedules.
- 3.2.7. Requests support services; such as, fire fighting standby, snow removal, fueling and defueling service, civil engineering support, or control tower clearances for ground movements.
- 3.2.8. Develops, maintains, and implements procedural guides. Procedural guides are required for use during actions; such as, force generations, Integrated Combat Turnarounds (ICT), aircraft crashes, fires, severe weather warnings, and other circumstances deemed necessary. Use unit operational plans as a basis in developing these guides and coordinate with affected agencies.
- 3.2.9. Monitors the status of Aerospace Ground Equipment (AGE) designated as mission essential, if it falls below its critical level.
- 3.2.10. Coordinates munitions-delivery priorities, when tasked.
- 3.2.11. Informs all required agencies, including the fire department, of the armament status of live munitions-loaded aircraft.
- 3.2.12. Prepares aircraft-condition projections for reporting through Status of Resources and Training System (SORTS).
- 3.2.13. Ensures all deviations to the daily flying schedule are reviewed and accurately reported.
- 3.2.14. Coordinates maintenance on the alert force.
- 3.2.15. Dispatches specialists as requested or as pre-planned.

**3.3. Specialist Use and Control.** When a specialty is not available within AGSs resources, the MOC coordinates with the MXS to provide support. In this case, specialists are dispatched by direct communication between the MOC and the work center. Specialists dispatched to the flightline report to, and are controlled by, the flightline expediter. The expediter releases the specialists when no longer needed for the dispatched task and tells the MOC.

- 3.3.1. When an unscheduled maintenance requirement exists in the MXS and the requirement cannot be satisfied within their resources, the work center asks the MOC for support. Dispatched personnel report to, and are controlled by, the work center supervisor. The work center supervisor releases the dispatched personnel when no longer needed and tells the MOC.

3.3.2. MOC monitors the MXS specialists working on aircraft scheduled/unscheduled maintenance requirements. To obtain specialist support for phase, periodic, or isochronal inspections; the MOC staffs the inspection personnel from the appropriate organizations. When specialists do not report to the requesting work center at the scheduled start time, MOC is informed and takes follow-up action.

**3.4. MOC Facilities.** Facilities and visual aids cannot be fully standardized due to variations in buildings, geography, missions, and organizational sites. When remodeling existing facilities, or when new facilities are being planned, in coordination with your Base Civil Engineer (BCE), the following standards apply:

3.4.1. Total floor space is based upon the maximum number of people working within the MOC during any one shift.

3.4.2. Install indirect rheostat-controlled room lighting. If the MOC is equipped to visually display ADS readouts, indirect lighting is not required.

3.4.3. Cover ceiling and walls with acoustical material to reduce noise levels.

3.4.4. Provide room with air conditioning and heat. An observation room is permitted. Control access to the MOC for security.

3.4.5. Isolate MOC electrical power circuits and have procedures in place for providing a standby power source and emergency lighting.

3.4.6. Cover floors with industrial type carpeting or use computer flooring.

**3.5. MOC Visual Aids.** Use visual aids to provide ready access to critical data. Computer terminals may be used in place of visual aids. If this option is used, develop procedures for retrieval of regularly printed products. These procedures could provide contingency working documents, in case of system failure. Normally, visual aids show the following:

3.5.1. Aircraft status boards list aircraft by serial number and show locations, priorities, statuses, limitations/remarks, ETICs, configurations, munitions loads, and fuel loads. Units, having only one standard configuration or fuel load, may omit these columns. Units using automated systems, need to display the above information; but may use "remark" or "narrative" portions of the screen for items not listed by specific title. Show limitations against the Minimum Essential Subsystem List (MESL).

3.5.2. Format flying schedule visual aids to show the individual aircraft that are scheduled for flights each day. When required; show serial number, scheduled takeoff, actual takeoff, scheduled landing, actual landing, sortie configuration, and remarks. When scheduled flying is by mission rather than by sortie, the flying schedule visual aid depicts the mission status as required. The daily part of the weekly schedule may be used in lieu of the flying schedule visual aid.

3.5.3. When required by unit mission, develop visual aids showing Emergency Work Orders (EWO), general war plans, strikes, mass loads, and other special mission requirements. The visual aids show maintenance actions required to generate aircraft in the time sequence to meet mission requirements and should be compatible with command-post visual aids.

3.5.4. When assigned a mobility commitment, use portable visual aids to meet deployed mission needs.

3.5.5. Maintain a specialist dispatch board or log to monitor specialist availability.

**NOTE:** This list may be modified to meet local needs as determined by the LG.

**3.6. Maintenance Communications.** Reliable, repetitive, and effective communications systems are essential for efficient operation. These systems should provide accurate, timely, secure, programmable-frequency and jam-resistant communications needed to accomplish the maintenance mission in a fully deployed isolated mode. Develop and exercise communications-out procedures. For effective flightline operation, more non-tactical radio nets are authorized when large numbers or different types of weapon systems are assigned or when support agreements so specify. The MOC develops a local call sign system.

3.6.1. A VHF/UHF radio is authorized to provide communications between aircraft and maintenance. Aircrews should relay advance status information. The following standard maintenance notification codes reflect the status of the aircraft being reported:

3.6.1.1. Code 1 – Aircraft is able to fly with no additional discrepancies.

3.6.1.2. Code 2 – Aircraft or system has minor discrepancies but is capable of further mission assignment within normal turnaround times.

3.6.1.3. Code 3 – Aircraft or system has major discrepancies in mission essential equipment that require repair or replacement before further mission assignment.

3.6.1.4. Code 4 – Aircraft or system has suspected or known radiological, chemical, or biological contamination.

3.6.1.5. Code 5 – Aircraft has suspected or known battle damage.

3.6.2. Each MOC has a hotline on the secondary crash phone net. When required, direct communications lines are provided to Quality Assurance, Munitions, Explosive Ordnance Disposal, Operations, Fire Department, Security, and the control tower.

**3.7. Debrief.** The LG will establish a debriefing function and the MOC normally has overall management responsibility. At local option, the Aircraft Generation Squadron (AGS) may be given the responsibility for Debrief.

3.7.1. Aircraft debriefing is necessary for all weapons or support systems, but is done differently depending on the complexity of the systems involved. Regardless of the debriefing option elected, procedures are set up to identify "Repeat/Recurring" discrepancies. As a minimum these procedures will limit the person who signs the "inspected by" block to a 7-skill level or higher.

3.7.1.1. A repeat discrepancy on an aircraft occurs on the next or attempted sortie after corrective action has been taken and the system or subsystem is used and indicates the same malfunction.

3.7.1.2. A recurring discrepancy on an aircraft occurs on the second through fourth sortie or attempted sortie after corrective action has been taken and the system or subsystem is used and indicates the same malfunction.

3.7.1.3. A corrective action occurs when parts are removed, replaced, repaired, or when any form of troubleshooting adjustment or cleaning of contacts is accomplished.

3.7.1.4. A write-up in the aircraft forms requesting an in-flight ops check does not negate the identification of a repeat/recur discrepancy if the malfunction returns.

3.7.1.5. All repeat/recurs are identified on the automated debriefing sortie recaps and aircraft forms by automated method or red stamp/pen/marker, etc. Debriefers will inform the production superintendent and expeditor when a repeat/recur occurs.

3.7.2. Ensure that aircraft utilization data recorded on the AFTO Form 781, **Aircrew/Mission Flight Data Document**, is entered into the ADS. The responsibility for inputting all flight data will be locally determined.

3.7.3. Ensure procedures are developed for loading flying times for aircraft, which are away from home station, regardless of the debriefing option elected.

3.7.4. Aircraft scheduled for turn-around sorties need not be debriefed if returned in code 1 or 2 status. However, debriefing is required, regardless of status, after the last flight of the day.

3.7.5. Discrepancies are sent to MOC either by automated or manual means. Assign status codes to aircraft according to AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*, and appropriate Mission Essential Subsystems List (MESL) or Minimum Equipment Listing (MEL), if applicable.

3.7.6. Ensure that there is emphasis of data collection during debriefing because of the financial impact of data lost during poor debriefing procedures.

3.7.7. During debriefing, debriefers are to remove the AF Form 664, **Aircraft Fuels Documentation Log** from the forms binder, and return it to the aircrew. The aircrew is to deliver this form to their document control officer, according to AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off-Station*. If debriefers do not perform this function, then the Unit will publish specific procedures outlining the delivery of the AF Form 664 to the document control officer.

3.7.8. When debriefing battle damage, the recovery organization uses the following forms:

3.7.8.1. AFTO Form 97, **Aerospace Vehicle Battle Damage Repair Debrief/Assessment Record**

3.7.8.2. AFTO Form 97A, **Aerospace Vehicle Battle Damage Repair Debrief/Assessment Record (Continuation Sheet)**

3.7.8.3. AFTO Form 781H, **Aerospace Vehicle Flight Status and Maintenance Document**

3.7.8.4. AFTO Form 781A, **Maintenance Discrepancy and Work Document**, according to T.O. 1-1H-39, *Aircraft Battle Damage Repair General Technical Manual*

3.7.9. When automated Maintenance Data Documentation (MDD) Systems, including the debriefing portion are available; data will be input using procedures outlined in the appropriate user manuals or directives. When automated systems are not available, alternate methods will be used, until the data can be input. To the greatest extent possible, all efforts will be made to relay data as soon as possible to the input location.

**3.8. Cannibalization Policy.** Units will prepare guidance outlining local cannibalization procedures.

Cannibalizations are authorized to ensure mission readiness and must be held to a minimum.

Cannibalization results in above-normal expenditure of maintenance resources and may cause damage to equipment. Accordingly, cannibalization will be closely controlled by the LG. Personnel permitted to authorize cannibalization actions must be kept to a minimum.

3.8.1. The production superintendent, or designated representative, will approve all on-equipment cannibalizations within squadron resources after coordination with MOC.

3.8.2. MOC assigns a control number and tracks the action for all on-equipment cannibalizations.

3.8.3. Off-equipment cannibalizations such as engine, AGE, munitions, etc., are approved by the respective work-center supervisor. When off-equipment cannibalizations are used to satisfy on-equipment needs, coordinate such actions with MOC.

3.8.4. Aircraft in-depot maintenance possessed by Air Force Material Command (AFMC) will not be cannibalized without the approval from AFMC. Aircraft in-ground training status, status code TX, will not be cannibalized without the approval of the owning group commander. Under no circumstances will parts be removed from Aircraft Battle Damage Repair (ABDR) training or static display aircraft for use on operational (flying) aircraft. If an Air Force-wide shortage of a particular component is identified, the USAF ABDR Program Management Office (PMO), in conjunction with the applicable weapon System Program Director (SPD), will determine if parts can be removed from ABDR training aircraft.

**Table 3.1. Maintenance Repair Priority Designators.**

DESIGNATION	APPLICATION
1	Aircraft on alert status, war plan or national emergency missions, including related Aerospace Ground Equipment (AGE), Munitions and Munitions Support Equipment (MSE).
2	<p>Primary mission aircraft, related AGE, munitions, and munitions support equipment, for the first 8 work hours after landing or start of recovery or within 6 work hours of a scheduled launch, alert or test flight and during simulated generation/Operational Readiness Inspection (ORI).</p> <p>Primary special weapons movement mission aircraft 48 hours prior to a scheduled launch.</p> <p>Air evacuation, rescue, weather mission aircraft, related AGE, munitions, and munitions support equipment.</p> <p>All transient support, and FAA aircraft. Flight or missile crew training simulator, other training equipment or related AGE required repair, which is impacting the mission by preventing or delaying student training.</p>
3	<p>Primary mission aircraft, engines, air launched missiles and related AGE, munitions and munitions equipment, and equipment undergoing scheduled or unscheduled maintenance, if not performed or repaired will prevent or delay mission accomplishment. Transient air vehicles not otherwise listed.</p> <p>Administrative aircraft within 8 hours of scheduled flight or on alert status with standby crews.</p> <p>Scheduled and unscheduled maintenance of munitions which if not performed will prevent or delay mission accomplishment.</p> <p>Precision Measuring Equipment (PME) requiring emergency repair or calibration, the lack of which will prevent or delay mission accomplishment.</p> <p>Spares not available in supply.</p> <p>Critical end items and reparable spares or supply designated "priority repair" spares.</p> <p>Routine maintenance of aircrew or missile training simulator, or other training devices or related AGE or sites and aircraft or equipment used for maintenance training.</p> <p>Avionics shop electronic AGE and automated test stations.</p>
4	<p>Routine or extensive repair of primary mission aircraft, related AGE, and repair cycle assets.</p> <p>Administrative aircraft undergoing scheduled or unscheduled maintenance.</p> <p>Routine maintenance of AGE not otherwise listed above.</p> <p>WRM items due maintenance or inspection.</p> <p>Inspection, maintenance, and TCTO compliance of Mission Spares Kit (MSK) or Mission Ready Spares Kit (MRSP) material.</p> <p>Scheduled calibration and unscheduled repairs on PME not listed above.</p> <p>Extensive repair of aircrew or missile training simulator, or other training devices or related AGE.</p>



DESIGNATION	APPLICATION
5	Non-tactical or non-primary mission aircraft undergoing extensive repair. Repair cycle asset shortages required to fill a Readiness Spares Packages (RSP) authorizations. Fabrication and repair of aeronautical items not carrying a higher priority. Time change requirements on non-nuclear items.
6	Fabrication and repair of non-aeronautical items, equipment and other aeronautical requirements. Repair cycle asset shortages required to fill a Peacetime Operating Stock (POS) authorization
7	Spares/repair cycle assets excess to base requirements.

**NOTES:**

1. The above table is intended as a guide in establishing maintenance repair priorities. It does not prohibit the production superintendent, in coordination with the MOC, from changing the maintenance repair priority when warranted. (Raising or lowering maintenance repair priorities does not necessarily require a corresponding change in the supply delivery priority). Factors warranting such actions include but are not limited to: Raising the priority—(1) Expedite repair of an aircraft that is delaying scheduled maintenance (ISO, Phase, etc.) flow time. (2) When known maintenance actions exceed the prelaunch time of 6 hours. Lowering the priority—(1) Aircraft on the flying schedule that require excessive maintenance and cannot meet subsequent scheduled sorties. (2) Following its last sortie of the day, the aircraft is scheduled for phase, periodic, TCTO, or extensive maintenance.
2. During SIOP or operational exercise, the preplanned maintenance flow determines job sequence.
3. The maintenance repair priority and supply delivery priority is normally identical. However, the MOC supervisor may authorize the use of a less responsive supply delivery priority when the delivery time specified is not justified.

**3.9. Plans, Scheduling, and Documentation (PS&D).** Plans, Scheduling, and Documentation functions may be divided depending on the type of organization. The extent of this division will be determined locally. The PS&D section:

- 3.9.1. Coordinates and publishes maintenance plans.
- 3.9.2. In conjunction with the Analysis function, ensures that the LG is advised of maintenance capability, problem areas, and adherence to schedules.
- 3.9.3. Performs the aerospace vehicle distribution functions.
- 3.9.4. Ensures that effective procedures are established to ensure flying hour accuracy in the appropriate ADS system.
- 3.9.5. Maintains Programmed Depot Maintenance (PDM) and other depot level schedules in support of NGB requirements.
- 3.9.6. In conjunction with QA, manages the Special Inspection (SI), Time Changes Item (TCI) and Time Compliance Technical Order (TCTO) programs.
- 3.9.7. Develops procedures for Aircraft Document Reviews (ADR). Performs PS&D portion of ADRs.
- 3.9.8. In conjunction with the Pro Super, plans and schedules the use and maintenance of aircraft and equipment to meet mission and training commitments. Attends all required scheduling meetings. Schedules and chairs the TCTO planning meetings
- 3.9.9. Ensures the daily scheduling meeting is conducted.
- 3.9.10. Reviews training schedules to minimize impact on production.
- 3.9.11. Ensures that aircraft pre/post-dock inspection meetings are conducted.
- 3.9.12. As locally determined, complies with -21 equipment accountability requirements.
- 3.9.13. Develops procedures for the assignment of Job Control Numbers (JCN) to be used for manual input when ADS is not available.

3.9.14. Maintains the Job Standard Master Listing (JSML) for inspections and time changes listed in the applicable T.O.s. JSMLs for off-equipment items and work packages are maintained by the owning work center.

3.9.15. Maintains historical aircraft and equipment documents, unless the LG elects to decentralize equipment documents to their responsible work center.

3.9.16. Conducts an annual spot check of decentralized documents that are not maintained in ADS.

3.9.17. Assists work centers in assigning ID numbers and automated tracking of inspection criteria.

3.9.18. Provides overall management and control of the maintenance-deferred code listing.

3.9.19. Serves as the functional advisor to other scheduling activities.

3.9.20. Checks semiannually the non-installed engine historical documents if engine management duties are assigned.

3.9.21. Ensures that work packages are loaded in the automated system for periodic and phase engine changes, and other recurring event-type inspection requirements.

**3.10. Aircraft Generation Planning.** PS&D develops, coordinates, and prepares aircraft maintenance generation flow plans, AF Form 2408 **Generation Maintenance Plan**, and AF Form 2409, **Generation Sequence Action Schedule**, (GSAS), for the various unit taskings, locally generated products may be used. The AF Form 2408 reflects the hour sequence of all actions necessary to launch aircraft. The legend block of this form contains a locally established legend, which indicates the type of aircraft and its tasked mission. The AF Form 2409 shows the actions necessary to generate a specific line number. The report codes used on this form are locally established codes for maintenance shown in the action column blocks. Use these report codes to report maintenance actions during generation.

3.10.1. Prepare the GSAS in sufficient detail to satisfy all generation actions. A completed GSAS requires only the aircraft serial number assignment and the 24-hour clock time annotation. Each plan must not exceed the unit's resources, i.e. load crews, equipment, convoys per hour, supervision, etc. To prevent classification, do not include items such as wartime beddown locations, OPLAN title, A-hour (SIOP) timing, or no-later-than timing from OPLANs.

3.10.2. Forward the completed GSAS form to affected activities at the beginning of the generation sequence.

**3.11. Operational Planning Cycle.** The objective of the operational planning cycle is to execute the wing flying hour program consistent with operational requirements and maintenance capabilities. This process requires operations and maintenance cooperation. The operational planning cycle begins with the annual allocation of flying hours and Utilization Rates (UTE). Maintenance schedulers must understand operational needs to determine supportability. Maintenance and Operations schedulers develop a proposed annual flying plan, which considers operational requirements and maintenance capability. Commit the fewest number of aircraft possible to meet programmed UTE rate standards and goals.

**3.12. Maintenance Planning Cycle.** The maintenance planning cycle ensures proper and effective use of maintenance resources. Quarterly, semi-annual, annual long-range planning is needed to support future needs such as flying hour programs, depot schedules, TCTO programs, inspections, and scheduled exercises. PS&D identifies and plans for the long-range maintenance requirements. PS&D forecasts and monitors requirements for the current and following 2 months. Maintenance planning includes predictable maintenance factors based on historical data and other staff inputs. Include all known operational events during maintenance planning to determine maintenance capability to meet mission needs. The Squadron Operations Officers, Squadron Maintenance Officer (SMO), and MS review the monthly maintenance plan and weekly schedule prior to submission to PS&D.

3.12.1. Flying Hour Allocation. Using the annual flying hour allocation, PS&D provides affected work centers the following planning factors not later than 20 August of each year, or as soon as possible after receipt of the flying hour allocations.

3.12.1.1. Required flying hours and estimated sorties and missions, in monthly increments.

- 3.12.1.2. Flying days in each month.
- 3.12.1.3. Aircraft and aircrew alert requirements.
- 3.12.1.4. Known and projected TDY and special mission requirements.
- 3.12.1.5. PDM/Modification (MOD) schedule.
- 3.12.1.6. Configuration and munitions requirements.
- 3.12.2. No later than 1 September, or as soon as possible after receipt of the flying hour allocations, Analysis and the Flight Supervisors provides PS&D the following planning factors:
  - 3.12.2.1. Estimated number of aircraft available by month.
  - 3.12.2.2. A projected airframe capability statement.
  - 3.12.2.3. Forecasted personnel capability.
  - 3.12.2.4. The number of supportable sorties for each month in the quarter.
  - 3.12.2.5. An estimated monthly attrition factor. This factor combines the operations, weather and logistics factors. Base the attrition factor on operations' request. Do not assign attrition sorties to a specific aircrew for the quarterly planning process. Only plan for 11-series flying requirements.
  - 3.12.2.6. A recommended block scheduling pattern, if known.
  - 3.12.2.7. A statement of limitations.

**3.13. Quarterly Scheduling.** The quarterly starts with the operational requirement for flying time, UTE rate, airframe availability, alert, depot, and other related scheduling data.

- 3.13.1. Operational requirements for the scheduling cycle are provided to PS&D by Operations not later than 25 days before the beginning of the quarter.
- 3.13.2. Maintenance negotiates the tasking at the scheduling meeting preceding the quarter being scheduled.
- 3.13.3. Updated monthly and weekly schedules are used to ensure the quarterly planning objectives are met.
- 3.13.4. Planners should make each of these plans as detailed and accurate as possible at the time of preparation. Include known special missions, depot maintenance schedules, higher headquarters commitments, and lateral command support requirements. When deviations from the quarterly plan are required to achieve the unit objectives, make necessary adjustments to the monthly and weekly plans while keeping within unit capabilities. If a lack of resources prevents meeting requirements, resources are applied in the following sequence:
  - 3.13.4.1. Alert.
  - 3.13.4.2. Higher headquarters directed missions.
  - 3.13.4.3. Training.
- 3.13.5. The operations group commander chairs a quarterly meeting no later than 21 days before the next quarter. Current operations briefs the unit's quarterly plan and include operational requirements, support capability, and any difficulties expected.

**3.14. Monthly Scheduling.** The monthly refines quarterly requirements. The actual publishing of a monthly plan will be at local option. Operational needs plus the attrition factor are the basis for developing the monthly flying and maintenance plans. Use the following sequence of actions to make sure monthly scheduling results in a contracted flying schedule requirement:

- 3.14.1. At the first weekly scheduling meeting of the month, Operations provides Maintenance with the estimated operational needs for the following month in as much detail as possible. Include known takeoff and landing times.
- 3.14.2. At the second weekly scheduling meeting of the month, Maintenance tells Operations if requirements can be met, adjustments to the proposed schedules are required, or limitations exist which may prevent successful fulfillment of requirements.

3.14.3. At the third weekly scheduling meeting formalize next month's plan. Maintenance presents projected capability, aircraft, and equipment availability. When the proposed monthly flying schedule contract is agreed upon and approved, it is included as a portion of the monthly maintenance plan.

Included in the monthly flying and maintenance plan are:

3.14.3.1. Monthly maintenance requirements (as required):

3.14.3.2. Transient work schedule, if applicable.

3.14.3.3. Scheduled inspections, TCTOs, engine changes, time changes, delayed discrepancies awaiting parts, contract or depot maintenance, washes, corrosion control, and training aircraft.

3.14.3.4. Support Equipment (SE) scheduled inspections, contract or depot maintenance, TCTOs, time changes, washes, and corrosion control. Do not include SE scheduled inspections at units using the scheduling procedures in the automated management system.

3.14.3.5. Avionics and other off-equipment maintenance scheduled inspections, TCTOs, assembly or repair operations.

3.14.3.6. Engine in-shop inspections.

3.14.3.7. Munitions, photo, Electronic Counter Measures (ECM) and other mission loading or configuration requirements, including ammunition changes.

3.14.3.8. Total ordnance requirements for aircraft support.

3.14.3.9. Tanks, Racks, Adapters, and Pylons (TRAP) and War Reserve Material (WRM) scheduled inspections, TCTOs, assembly, or repair operations.

3.14.3.10. Special activities, such as commander's calls, group TDY, and unit formations.

3.14.3.11. Monthly training schedules, if not published separately.

3.14.4. Detailed support requirements, including as necessary:

3.14.4.1. Petroleum, Oil, and Lubricants (POL) servicing.

3.14.4.2. Supply requirements.

3.14.4.3. Food service requirements.

3.14.4.4. Fire department requirements.

3.14.4.5. Security requirements.

3.14.4.6. Civil engineer requirements.

3.14.4.7. Airfield operations.

3.14.4.8. It is not necessary to include support equipment scheduled inspections.

**3.15. Weekly Scheduling.** The weekly is the final refinement to the monthly plan and results in the weekly flying and maintenance schedule. Operations and Maintenance review the proposed weekly flying and maintenance schedule prior to the weekly scheduling meeting. At the scheduling meeting, evaluate the past week's accomplishments and negotiate and approve refinements to the coming week's schedule.

3.15.1. Not later than 2 workdays before this meeting, operations gives maintenance the following information (as required):

3.15.1.1. Aircraft takeoff and landing times.

3.15.1.2. Configuration requirements.

3.15.1.3. Munitions requirements.

3.15.1.4. Fuel loads.

3.15.1.5. Special or peculiar mission support requirements.

3.15.1.6. Alert requirements.

3.15.1.7. Exercise vulnerability.

3.15.1.8. Deployments.

3.15.1.9. Off-base sorties.

3.15.1.10. Other special requirements.

3.15.2. Once approved, the schedule is the final planning guide for both operations and maintenance. Follow it as published (may be electronic) or as amended by coordinated changes. PS&D distributes the schedule to each appropriate activity and work center no later than Friday morning preceding the effective week.

3.15.3. Units publish (may be electronic) a weekly schedule for normal home base operations, and during deployments. Include the following in the weekly flying and maintenance schedule:

3.15.3.1. Sortie sequence numbers, aircraft tail numbers (primary and spares) when known, scheduled takeoff and landing times, aircraft or equipment scheduled use times, configurations, and special equipment requirements.

3.15.3.2. Spare aircraft requirements. Spare requirements are printed by day for each flying squadron. Generate only the absolute minimum of spare aircraft.

3.15.3.3. Scheduled maintenance actions, by aircraft and equipment serial number, to include inspections, TCTOs, time changes, contract and depot inputs, engine changes, washes or corrosion control, documents review and deferred discrepancies.

3.15.3.4. Required pre-inspection and other maintenance meeting schedules to include minimum attendees.

3.15.3.5. Wash rack use.

3.15.3.6. On Equipment training requirements.

3.15.3.7. Support Equipment (SE) inspection or maintenance schedule by type, serial number, or identification.

3.15.3.8. A list of new or revised publications, T.O. indexes, inspection workcards, checklists and codebooks; include date of change. Automated products, such as Automated Technical Order Management Systems (ATOMS), may be used. This list will be provided from the Technical Order Distribution Office (TODO) no later than the close of business, Thursday preceding the effective week.

3.15.4. Changes to the weekly schedule:

3.15.4.1. Update the schedule with pen-and-ink changes. Use an AF Form 2407, **Weekly/Daily Flying Schedule Coordination Sheet**, stating the changes are pen-and-ink. Locally devised or computer-generated products may be used in lieu of the AF Form 2407, as long as they provide all the information contained in the AF Form 2407.

3.15.4.2. Changes made during the daily scheduling meeting require an AF Form 2407.

3.15.4.3. Changes made after the daily scheduling meeting and prior to the unit's first crew ready time the next day, also require an AF Form 2407. *EXCEPTION:* Changes arising during the remainder of the flying day (those after the first crew ready time) do not require an AF Form 2407.

3.15.4.4. The agency requesting the change initiates the AF Form 2407 and coordinates it through the affected production superintendent, operations group, logistics group, and wing staff agencies, as applicable.

**3.16. Daily Planning.** The daily plan is used to verify the daily portion of the weekly plan with Operations. Changes in aircraft serial numbers are made up to 2 hours before the scheduled launch time. Changes needed to fulfill the operational mission commitments are made and sortie requirements confirmed no later than 18 hours before the first scheduled launch time of the day.

**3.17. Depot Programs.** PS&D keeps a current serial number listing of projected inputs and outputs of aircraft and equipment into depot repair programs. Schedulers use the AFTO Form 103, **Aircraft/Missile Condition Data**; to record certified maintenance needs according to T.O. 00-25-4, *Depot Maintenance*. PS&D then coordinates any resulting changes to the depot program with affected scheduling functions.

**3.18. Document Management.** Documentation sections keep historical documents and maintenance data essential to the planning and scheduling of maintenance. The documentation activity is an essential link in the processing of related forms for TCTOs and time change items.

3.18.1. Keep individual documents for end items, subsystems, and components in accordance with the T.O. 00-20 series, this regulation, automated management systems' documentation, AFI 21-103, *Equipment Inventory Status Utilization*, AFI 37-122, *Air Force Records Management Program*, and the applicable -6 T.O.s.

3.18.2. Use automated products in place of AFTO Forms 95, **Significant Historical Data**, to document significant historical events on aircraft and engines.

3.18.3. Filing and Disposition. Establish files and properly dispose of documents. Files for maintenance documents are set up in accordance with AFI 37-122 and T.O. 00-20-1. Complete disposition of documents according to AFI 37-138, *Disposition of Air Force Documentation-Policies, Procedures, and Responsibilities*. Equipment records may be decentralized down to the section owning the equipment.

3.18.4. Documents Review and Validation. Units initiate documents review and validations on assigned aircraft at designated intervals. As a minimum review the documents before and upon completion of phase, periodic or isochronal inspections, or other major maintenance such as programmed depot maintenance, analytical condition inspections, and fatigue tests. Also, review AFTO Forms 781F, **Aerospace Vehicle Flight Report & Maintenance Document**, for accuracy.

**3.19. Deferred Discrepancy.** Timely accomplishment of deferred maintenance is the responsibility of the crew chief and applicable work center supervisor. Not Mission Capable (NMC) or Partial Mission Capable (PMC) status discrepancies may be deferred due to manpower, equipment, or management decision. Discrepancies deferred due to non-availability of parts are promptly loaded to the ADS when backordered through supply. Supply enters supply data against deferred discrepancies. TCTOs, TCIs, SIs and One Time Inspections (OTI) in deferred status are not deferred discrepancies. PS&D provides overall management and control of the maintenance deferred code listing and the AWM portion of the delayed discrepancy files in the appropriate ADS.

**3.20. Aircraft Document Review (ADR).** The ADR is completed every 30 days and documented in the AFTO Form 781A. The documents are also reviewed prior to and upon completion of major inspections and depot maintenance; however, these documents do not have to be cited in the AFTO Form 781A. Procedures for accomplishing an ADR will be developed locally, to include as applicable, who initiates, reviewing agencies, AFTO Form 781 entry requirements, who signs for completion, and configuration management verification procedures.

**3.21. Time Compliance Technical Orders (TCTO).** TCTOs are treated as scheduled maintenance and integrated into maintenance planning. PS&D schedules, controls, and directs all TCTOs except for selected engines and munitions items. PS&D:

3.21.1. Ensures proper documentation of TCTO accomplishment and maintains the documents for assigned equipment.

3.21.2. Prepares and distributes AF Form 2001, **Notification of TCTO Kit Requirements**, or an ADS product to requisition requirements for TCTOs.

3.21.3. Establishes schedules for the timely completion of TCTOs. Conducts necessary planning meetings.

3.21.4. Monitors the current status of TCTOs in the ADS. Maintains the TCTO status report.

3.21.5. Receives a copy of the TCTO Kit Reconciliation Listing from Supply each month; reviews this report and reconciles with Supply at the monthly reconciliation meeting. When transferring equipment with outstanding TCTOs, ensures that applicable kits are transferred to the gaining organization.

3.21.6. Prepares and processes kits, parts, or special tools requirements according to automated management systems' documentation. PS&D prepares an on-line work order in the automated system for each affected end-item, including spares.

3.21.7. If a condition or inspection TCTO generates a requirement for parts, the performing work center enters the discrepancy in the AFTO Forms 781A, or applicable equipment record, and orders the required parts as normal wear out and replacement. Condition and inspection TCTOs are complete when the inspection is finished.

3.21.8. QA sends copies to each affected work center and PS&D tracks accomplishment of command directed and local one-time inspections and modifications. Scheduling functions generate a TCTO status report showing compliance of TCTOs.

3.21.9. The Munitions Element, PMEL, Engine Management, AGE, or Life Support may perform PS&D duties for those unique items that require TCTOs.

3.21.10. In conjunction with QA, schedules and co-chairs TCTO planning meetings.

3.21.10.1. Determines responsibility, during the meeting, for performance of work and documentation for both performing and assisting work centers. PS&D establishes attendance requirements and initiate AF Form 2410, **Inspection/TCTO Planning Check Sheet**, or meeting minutes. Use these to record the meeting and methods of accomplishment. Annotate pertinent discussion items (e.g. TCTO applicability and purpose, number of units to be modified, serial or ID number of equipment, verification, disposition of affected components), on the AF Form 2410 or meeting minutes. All attendees sign this form at the conclusion of the planning meeting indicating agreement with the conditions.

3.21.10.2. On agreement, PS&D:

3.21.10.2.1. Loads the TCTO into the automated system showing current status.

3.21.10.2.2. Orders any kits, parts or special tools through the automated system's Standard Base Supply System module, where capability exists.

3.21.10.2.3. Establishes a file for each TCTO after initial entry in the automated system. Include the AF Form 2410 or meeting minutes, automated system products (if required), a supply cover letter of affected items in stock (from quality assurance), and the basic TCTO. Also, include pertinent documents affecting the TCTO (supplements, messages, notices of kit availability, supply difficulty letters, etc.). Maintain this file until the rescission date. Other scheduling functions maintain similar TCTO folders with pertinent documentation. Destroy files according to AFI 37-122 and T.O. 00-20-4, *Configuration Management Systems*.

3.21.11. Control and Transfer of TCTO Kits. Transfer aircraft or equipment with TCTOs still pending completion with their applicable TCTO kits. Retain engine TCTO kits for engines installed on aircraft at depot locations if the aircraft is returning to that unit for TCTO compliance. AFMAN 23-110; T.O. 00-5-15, *Time Compliance Technical Order System*; and T.O. 00-5-1; *AF Technical Order System*, contain detailed guidance for the transfer of TCTO kits.

**3.22. Time Change Items.** PS&D identifies and tracks projected time changes on AFTO Form 223, **Time Change Requirement Forecast**. Use forecasts to order time change components before their due date. Schedulers forecast only those selected items specifically identified in any of the following: T.O. 00-20-9, *Forecasting Replacement Requirements for Selected Calendar and Hourly Time Change Items*; FSG 13, and Material Management Code AQ Items; applicable commodity TOs; or the aircraft -6 T.O. Schedulers:

3.22.1. Order all items requiring time change up to 60 days before the required month. Order munitions items between 45 and 60 days before the next calendar year quarter.. Forward only AF Forms 2005 to the Material Accountable Supply Section/Combat Ammunition System-Base (MASS/CAS-B).

3.22.2. Schedule the time change in the automated system and incorporate it in the weekly schedule upon notification by supply that the part is available.

3.22.3. Update the suspense validation in the automated system when the time change is completed.

3.22.4. Obtain a Job Standard (JST) number for both the Date of Manufacture (DOM) and Date of Installation (DOI) for Cartridge Actuated Devices (CAD), Propellant Actuated Devices (PAD), and life sustaining items in the aircraft -6 T.O. and applicable commodity T.O.s from PS&D.

3.22.5. Coordinate management of their time change items with egress, survival equipment and life support.

3.22.6. Load only the JST number (DOI or DOM) that comes due first against a specific part or serial number. When the DOI and DOM frequencies are identical, maintain a job standard for the DOM as a minimum.

3.22.7. Establish responsibilities for preparing the time change requirements forecast. Consolidate all time change forecasts prior to submission to supply.

**3.23. Scheduled Maintenance.** In preparation for a scheduled inspection, PS&D prepares an automated product or an AF Form 2410. All known TCTO, time change, calendar, special inspections, and open discrepancies will be identified either on the AF Form 2410 or on the ADS product. The AF Form 2410 will be used as the work package cover sheet if an ADS product is used for all the maintenance requirements. A pre-inspection meeting will be held to discuss work to be accomplished, sequence of events, and possible problems. A post-inspection review between the inspection supervisor and PS&D should be conducted. The completed work package will be filed in the aircraft jacket file.

**3.24. Aircraft Configuration Management (ACM).** ACM provides unit managers the capability to determine the configuration of their aircraft. The configuration management subsystem identifies selected serially controlled and Time Change Item (TCI) into the automated maintenance management system. Load only approved part numbers, with an exact Quantity Per Assembly (QPA) and Next Higher Assembly (NHA) identified by work unit code. To manage the aircraft configuration management subsystem, PS&D:

3.24.1. Assigns specific work centers, which perform remove and replace configured items, with responsibility to update the automated system database. This includes checking the suspense validation records for daily processing of suspense's.

3.24.2. Checks, during document reviews, the actual configuration data against the approved configuration. Annotate disparities on the applicable AFTO Form 781. Enter out-of-configuration life sustaining TCIs (e.g. egress and life support) in the AFTO Form 781A as a red X condition.

3.24.3. Discusses the actual or approved configuration during all aircraft pre-dock meetings. Verify items identified as out of configuration during the inspection. Identify items discovered as out of configuration during the inspection at the post dock meeting. Ensure the responsible work center updates the automated system.

3.24.4. Configuration Tables. The maintenance analysis and database management section initializes and modifies the configuration tables upon approval from the aircraft System Program Director (SPD). Maintenance personnel discovering a tracked item, installed with an Air Force part number, and not on the approved configuration table, notifies the database management section. Database management section identifies the disparity to the SPD's configuration manager. On validation, the SPD authorizes the database management section to add the new part number to the approved table. Modify the configuration table without approval if the change is the result of a TCTO.

**3.25. Engine Management.** Responsibilities are contained in AFI 21-104, *Selective Management of Selected Gas Turbine Engines*, AFI 21-132, *Air Force Engine Trending and Diagnostics Program*, ACCI 21-152, *Engine Trending & Diagnostic (ET&D) Program* (where applicable), and engine tracking procedures are contained in 00-20 series T.O.s. This function will be assigned to the Logistics Support Flight and may be collocated within the propulsion facilities. As a minimum, the Engine Manager will:

3.25.1. Monitor the DO42 Comprehensive Engine Management System (CEMS) for accuracy and timeliness of all data reported.

3.25.2. Maintain the approved/authorized ADS.

3.25.3. Maintain automated/manual engine and component historical documentation.

3.25.4. Ensure proper documentation and reporting of TCTOs, time changes, and parts tracking on engines and engine-related components are accomplished.

3.25.5. Ensure that command-directed modifications and rescissions requiring de compliance work are accomplished.



- 3.25.6. Manage the TCTO, engine parts tracking, inspection/time change, and engine monitoring systems of the appropriate ADS.
- 3.25.7. Requisition engine TCTO kits, parts, and special tools on AF Form 2001, **Notification of TCTO Kit Requirements**. Monitor and record the daily status of TCTO accomplishment.
- 3.25.8. Forecast life limit change requirements resulting from analysis of life limit data and engine time change/inspection requirements and engine historical document files. Manage and maintain the associated budget and account.
- 3.25.9. Request required parts, modules, and components needed for time change/special inspections.
- 3.25.10. Schedule all time change/special inspection and TCTOs on engines and engine related components. Coordinate with the PS&D to ensure required maintenance actions are accomplished.
- 3.25.11. Ensure transferred engines or major assemblies are accompanied by assigned TCTO kits and the required historical documentation.
- 3.25.12. Coordinate with Supply to ensure requirements for Engines Not Mission Capable-Supply (ENMCS) are accurately reported and promptly requisitioned.
- 3.25.13. Ensure deployed engine monitors are assigned and trained to perform deployed engine manager/monitor duties.
- 3.25.14. Check semiannually the non-installed engine historical documents.
- 3.25.15. Ensure a bimonthly status report is submitted to ANG/LGMM. Content and format will be requested via message from ANG/LGM.

**3.26. Training Management.** The maintenance training program ensures that all personnel are qualified to perform their job; and that a balance of skills is maintained for all maintenance personnel. The two elements of the training program are upgrade and qualification training. Upgrade Training (UGT) provides the job knowledge and required skill levels of an Air Force specialty. UGT administration is vested in the individual's supervisor/trainer, training management, and base training manager. Qualification Training is ongoing and designed for individuals to perform their job. Units will locally determine which methods to use to provide qualification training. At local option, Training Management may be placed into Quality Assurance. In either case, the responsibilities outlined below will remain the same. Training Management:

- 3.26.1. Manages, controls, and develops the training program. Works closely with supervisors and the Base Education and Training Manager to ensure training requirements are identified, scheduled, and completed on a timely basis.
- 3.26.2. Manages the testing program. Tests will be controlled to prevent compromise. Locally developed tests will be monitored for currency and accuracy. Training Management will coordinate with functional areas to ensure a comprehensive annual review is conducted and will update the test when required.
- 3.26.3. Schedules training requirements to maximize use of all training resources by identifying and grouping personnel with similar training requirements whenever possible.
- 3.26.4. Maintains the status of the overall training program and provides a monthly summary to the LG and squadron commanders to aid in managing the balance of skills. Maintains Special Certification Roster (SCR).
  - 3.26.4.1. Ensures the SCR is current.
  - 3.26.4.2. Ensures the SCR is coordinated with workcenters, squadron commanders, quality assurance, and approved by the LG.
  - 3.26.4.3. Maintains a signed master copy of the SCR and forwards a signed master copy to QA.
  - 3.26.4.4. Distributes a copy of the applicable portion of the SCR to each flight.
- 3.26.5. Is responsible for the overall management and control of the Automated Training Subsystem (ATS).

3.26.6. Evaluation Requirements. Work Center supervisors evaluate personnel to ensure they possess the required skills to perform and meet the wartime tasking. Additional evaluation and training may be required when equipment has been modified/replaced or when the LG elects to require special training, evaluation, and certification for the operation of selected powered SE, vehicular SE, or special equipment. Such equipment must be identified in a local directive.

3.26.7. Personnel Processing. During in-processing, Training Management and work center supervisors will review and evaluate all previous training completions and current work center requirements. The individual's Maintenance Personnel Record (MPR) and training requirements will be updated at this time. During out-processing, Training Management will delete any scheduled training events. Any individual in Upgrade Training (UGT) will be deleted from UGT and a copy of all completed training will be placed in their AF Form 623.

3.26.8. Procedural guidance for Training Management is found in ANGMAN 36-2201, *Maintenance Training Policy*.

**3.27. Management Analysis.** This function consists of Maintenance Data Analysis, Data Base Management and Deficiency Analysis, and Host Data Base Management (when assigned). At local option, Management Analysis function may be placed into Quality Assurance. In either case, the responsibilities outlined below will remain the same. Maintenance Data Analysis performs the following functions:

3.27.1. Performs analysis to support organizational level review, and planning. The traditional deficiency analysis is incorporated into this function and into the quality environment. The focus is on continuous improvement.

3.27.2. Provides assistance in identifying mission key indicators. The indicators used will vary depending on unit mission. Indicators may include, but are not limited to, effectiveness and efficiency indicators; such as, mission capable rates, abort rates, break rates, cannibalization rates, aircraft reliability rates, aircraft delivery rates, etc.

3.27.3. Performs trend analysis on unit level key indicators. Analyzes results and informs personnel of unit performance. A number of trending tools are available but the method used is less important than the need to systematically monitor indicators to determine trend direction.

3.27.4. Analyzes results of quality evaluations to identify and prioritize processes, which are candidates for improvement. Identification and prioritization of improvement candidates should be based on long term trends, not on any single result. It is preferable to have at least ten data points available before conclusions are formed.

3.27.5. Provides verified data and reports to identify and prioritize candidates for process improvement. Once processes are identified and prioritized, the method of routing this information for appropriate action is determined locally.

3.27.6. Provides expertise in identifying specific process output measurements. In order to improve a process, measurement techniques must be developed to monitor progress. Typically, a team will measure process output before any changes are made, test a change, and compare the results to determine improvement. Process output measurements could include error rate, failure rate, process time, process cost, customer satisfaction rate, or accident rate.

3.27.7. Monitors specific process outputs to determine performance direction, which should not be confused with the monitoring of mission key-indicators described above. This task pertains to process output measurements and is normally performed by the work center owning the process. The assistance of Management Analysis may be requested when such monitoring is beyond the capability of the work center.

3.27.8. Provides maintenance planning factors for use in planning the flying program.

3.27.9. Prepares a data summary (ANG 7401) for cross-tell purposes. The SPOC, in coordination with ANG/LGMM, will specify preparation, frequency, effective date, distribution, and data elements to be reported. Compiles and submits the 7401 report to ANG/LGMM by the 11th working day of each month for the preceding month. Procedural guidance can be found in ANGMAN 21-103, *Management Analysis Policy*.

**3.28. Data Base Manager (DBM).** Ensures system security, assists the users to resolve problems, and acts as liaison between user and Host Data Base Management. Specifically, the DBM will:

- 3.28.1. Restrict the use of Transaction Identification Codes (TRIC)/CAMS screens to prevent the unauthorized use of computer data.
- 3.28.2. Ensure that users are aware of problems including System Advisory Notices (SAN), if applicable.
- 3.28.3. Perform or assist functional users to perform TRICs that are restricted to the Data System (DS) remote. Unit Data Base Management will be assigned the DS remote.
- 3.28.4. Control and monitor submission of all difficulty reports and change requests.
- 3.28.5. Submit problems beyond unit capability to the Host Data Base Manager or to the on-site technical representative.
- 3.28.6. May provide microcomputer systems management for the maintenance complex. However, the LG may assign the following tasks to other functions as an additional duty:
  - 3.28.6.1. Control and validate micro-computer equipment requests submitted for microcomputer equipment.
  - 3.28.6.2. May serve as the File Server Administrator (FSA) for the Local Area Network (LAN).
  - 3.28.6.3. May serve as the Computer Systems Manager (CSM).
  - 3.28.6.4. Serve as custodian for Automated Data Processing Equipment (ADPE).
- 3.28.7. Host Data Base Management. The objective of this section, when assigned, is the overall support of the ADS system and its tenant users.
- 3.28.8. Acts as the OPR for Data Integrity Teams

**3.29. Plans and Programs.** Is the focal point for logistical planning of aircraft maintenance activities. This section develops and maintains programs in the support of the maintenance effort. Specifically, Plans and Programs:

- 3.29.1. Assists the deployed senior maintenance representative with site surveys.
- 3.29.2. Coordinates with Wing Plans to compile the data necessary to implement and maintain the deployment data base.
- 3.29.3. Reviews all operations plans requiring support from the aircraft maintenance complex.
- 3.29.4. Coordinates maintenance planning actions in support of all aircraft maintenance plans with concerned activities.
- 3.29.5. Maintains personnel and equipment rosters, applicable plans, and checklists required to deploy aircraft maintenance personnel and equipment.
- 3.29.6. Ensures personnel readiness folders (if used) are maintained.
- 3.29.7. Prepares and submits financial requirements for inclusion in the base financial plan and operating budget. Coordinates with each cost center to assess financial needs. Advises the LG on the distribution of the operating budget. Analyzes past expenses, current expenses, and programs to project the financial requirements.
  - 3.29.7.1. Monitors the status of expenses to include Depot Level Repairables (DLR) by cost center and briefs the LG of unusual expenditures that may impact the unit's financial condition. Reviews financial status to ensure each cost center receives equitable and necessary base-funded materials and services.
  - 3.29.7.2. Evaluates trends and operating costs, which are used in projecting commitments and obligations.
  - 3.29.7.3. Provides required training to the cost center managers.
  - 3.29.7.4. Coordinates on all commercial contract requests within the maintenance complex.
- 3.29.8. Monitors personnel authorizations and assignments for the LG and acts as the Maintenance point of contact for personnel utilization actions and SORTS reporting.
- 3.29.9. Maintains a current copy of the Maintenance manning documents.
- 3.29.10. Initiates/coordinates on all personnel assignments and change requests. Monitors critical AFSCs. Ensures assigned personnel are properly loaded in the personnel data system.
- 3.29.11. Is familiar with all Maintenance facilities. On an annual basis determines if existing facilities are suitable for the activities to which they are assigned.

- 3.29.12. Serves as the focal point for the management of facilities and development of the master aircraft-parking plan. Initiate work requests for new construction or alteration to existing facilities. Coordinates all facility requirements with affected agencies.
- 3.29.13. Is the focal point for Maintenance inputs to support agreements.
- 3.29.14. Conducts staff-assist visits, and documents, at least annually, to each maintenance shop to assist with financial management, personnel management, facility management, and deployment planning.
- 3.29.15. Monitors and validates all telephone installation requests, if applicable.
- 3.29.16. If designated as a Lead or Pilot Unit:
  - 3.29.16.1. Coordinates with Wing Plans and those other UTC tasked units on cargo and equipment authorizations/requirements in order to develop and maintain a standardized package, which meets the specific mission capability requirements.
  - 3.29.16.2. Coordinates with Wing Plans and the ANG Table of Allowance monitor for that UTC on equipment changes and new equipment requirements.
  - 3.29.16.3. Assists with site surveys of deployment locations.

**3.30. GO81 Management .** This function manages and coordinates the overall use and development of GO81 equipment and programs within the maintenance complex and management of the system to meet unit, ANG and AMC requirements. The GO81 management element is responsible for the following:

- 3.30.1. Developing and maintaining an LOI for local management of GO81, which as a minimum contains:
  - 3.30.1.1. Contingency plans for the support of critical areas during extended computer downtime.
  - 3.30.1.2. Use of the GO81 system during deployments and contingency operations.
- 3.30.2. Assisting agencies within the maintenance complex to better utilize GO81.
- 3.30.3. Maintaining an up-to-date master copy of all publications pertaining to GO81 policies, procedures, programs, and ensuring changes are briefed to all users.
- 3.30.4. Ensuring integrity of the database is maintained by limiting user access to authorized work centers and personnel.
- 3.30.5. Assigning USERID/Password access to GO81 users. Monitoring and assisting users with LOGIN procedures. Unlocking and resetting passwords as requested by users.
- 3.30.6. Acting as approval agency for the LG/CC or LSF commander on program 8033 off-base messages.
- 3.30.7. Trouble Reporting. GO81 management is the primary point of contact (POC) for reporting all GO81-related problems. Trouble reporting is directed to GO81 management element.
- 3.30.8. Coordinating with ANG/LGMM personnel concerning hardware and software problems.
- 3.30.9. Ensuring all GO81 users are informed of downtimes scheduled for preventive maintenance.
- 3.30.10. Providing specialized functional or work center training to POCs to ensure computer competency at the user level.
- 3.30.11. Assisting maintenance activities in the proper application and interpretation of GO81 technical publications.
- 3.30.12. Troubleshooting and, if possible, solving GO81-related problems beyond the capabilities of the functional users. If solving the problem is beyond GO81 management capability, identifying the problem to ANG/LGMM for corrective action.
- 3.30.13. Ensuring GO81 users are aware of problems and corrective actions relating to GO81.
- 3.30.14. Ensuring that users are aware of problems including System Deficiency Reports (529s) applicable to the functional area by evaluating all recommended F9038 program changes received from other GO81 users.
- 3.30.15. Coordinating with the LG/CC of LSF commander and applicable staff organizations on matters concerning interface with associated systems at base level, as directed by ANG/LGMM.

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**Chapter 4****QUALITY ASSURANCE (QA)**

**4.1. General Information.** QA activities are the direct management responsibility of the LG. All maintenance personnel share responsibility for safety of flight, safety of equipment operation, quality of work accomplished, and full participation in product-improvement efforts. QA is the focal point for Product Improvement, Repair Enhancement Program (REP), Functional Check Flight/Operational Check Flight (FCF/OCF), Quality Assessment Program (QAP), Joint Engineering Data Management Information and Control System (JEDMICS), Weight and Balance, Modification Management, Aircraft Impoundment, Quality Assurance Representative (QAR), and TODO programs. Increasing reliability and maintainability of parts/components and equipment is accomplished through the unit Product Improvement Program (PIP). QA assists in identifying trends and problem areas through inspections/evaluations and special assessments. As a team advisor, QA helps guide maintenance process improvement teams, and may provide on-the-spot assistance. QA ensures maintenance standardization at the unit level. At local option, Management Analysis and Training Management may be assigned as an integrated part of QA rather than the Logistics Support Flight. If this option is exercised, the duties and responsibilities of Training and Analysis are specified in Chapter 3. QA works in partnership with individual maintenance personnel, supervisors, and commanders to develop a viable quality assessment program that will assess, analyze, and identify areas for continuous improvement. The team assesses the quality of training and evaluates processes to increase reliability and maintainability. Aircraft and equipment condition are determined through the Quality Assessment Program (QAP). QAP is a dynamic assessment system designed to improve combat capability through high quality maintenance and effective maintenance training. The following objectives are the gauge for determining quality maintenance performance. Measuring performance against these objectives provides any aircraft maintenance activity insight on where it needs to improve. Success within these areas inevitably fills maintenance's most important role of customer satisfaction. The major customers being the pilot/crew and the aircraft itself. Investigating the impact of management, people, technical data, workplace, equipment, supplies, and services in any process, will uncover areas of opportunity for improvement. This chapter identifies those important elements, present within any aircraft maintenance operation, which units must assess to determine the quality of their maintenance. Each Group with an aircraft maintenance function administers this program through QA. QA ensures collection and presentation of performance measures, facilitates process improvement efforts, investigates problems, and communicates with agencies outside the unit on technical maintenance matters.

4.1.1. Maintenance objectives are:

4.1.1.1. Safe people, equipment, and procedures.

4.1.1.2. A competent workforce that is effective, accountable, and responsive.

4.1.1.3. Adherence to prescribed directives.

4.1.1.4. Accurate reporting and documentation.

4.1.1.5. Responsible and efficient use of available resources.

4.1.2. Measuring performance against these objectives provides any aircraft maintenance activity insight on where it needs to improve.

4.1.3. Tracking performance provides feedback whereby each objective is addressed and ultimately improved. All units must ensure they have a system, which gathers requisite data to generate meaningful metrics. Within this system, the units will identify procedures to ensure reviews of processes affecting metrics. These process reviews constitute the most important function in each unit's maintenance quality assessment. Because the collection and review of metrics alone does not drive improvement, units must strive to understand and improve the processes that affect each metric. Reviewing processes will help target areas requiring improvement. Improving those areas will drive each metric in the desired direction, thereby improving maintenance quality.

**4.2. Unit Level Measures.** These metrics provide indications of customer satisfaction. They are useful in determining how well maintenance is performing, but alone, may not be enough for managers to use for direct action. For this reason, units must develop metrics relevant to their unique operation, which quantify processes managers can change. Because different missions, climates, facilities and a host of other variables create varied maintenance processes for each wing, units will often develop unique paths to improvement. Along each path, units will find critical elements which must either be present or done correctly to ensure success. Unit level metrics will help managers determine the effects of change on their processes. Unit level metrics provides maintenance managers with a barometer that can be used to manage a shop or flight. They provide managers tools to drive quality maintenance objectives in the appropriate direction.

4.2.1. The following factors are important and will provide managers a starting point in analyzing how to improve maintenance quality.

4.2.1.1. Technically proficient, trained people.

4.2.1.2. Safe equipment, supplies, and services.

4.2.1.3. Available equipment, supplies, and services.

4.2.1.4. Motivated people.

4.2.1.5. Safe people.

4.2.1.6. Resource utilization by management.

4.2.1.7. Safe workplace.

4.2.2. Units seeking to effect changes in the factors listed above can generally look to the following drivers. Changing these drivers can have a considerable effect on maintenance quality.

4.2.2.1. Leadership.

4.2.2.2. Supervisory management skills.

4.2.2.3. Management policy.

4.2.2.4. Tech data content.

4.2.2.5. Technically proficient, experienced people.

4.2.2.6. Management control of maintenance actions.

**4.3. Quality Assessment Program (QAP).** The QAP encompasses all assessment activities for the LG and ensures that all equipment and processes are adequately evaluated. The QAP consists of the maintenance Key Task List (KTL), the maintenance Routine Assessment List (RAL), other assessments and evaluations performed by QA and the Maintenance Self-Assessment Programs. Decentralizing some of the quality measurement function to the supervisor/shop chief level allows maintenance the opportunity to assess, analyze, and identify unique problems that exist internally to maintenance. The QAP provides maintenance managers with a method to evaluate the quality of unit maintenance through assessment of process compliance, equipment condition, and maintenance training. Provides an avenue to determine the root cause of process failures and allows for quality review by functional working groups to determine suggested corrective actions. The QAP identifies:

4.3.1. Processes that are working well, processes that can be improved, and broken processes.

4.3.2. Processes that can be improved: A process, which can be improved but does not affect the performance of the equipment involved.

4.3.3. Broken Process. Improperly completed inspection or maintenance action or a safety violation. A required inspection, T.O. procedural item missed or improperly completed that would affect the performance of the equipment involved. Fixing the process requires immediate attention.

4.3.4. Recommended actions to fix or improve the process.

**4.4. QAP Assessment Methods.** QAP assessment methods are designed to evaluate processes and to evaluate the quality relative to a predetermined level of expected or acceptable status. The QAP is not intended to be used for disciplinary actions against personnel and should not be recorded in personnel documents.

4.4.1. Key Task List (KTL). The QAP will include a KTL published by QA if determined necessary by the LG. All maintenance actions/functions listed on the KTL will require mandatory call-in to QA each time the maintenance action/function is accomplished. QA evaluators will normally respond and perform an evaluation, but on a limited basis may waive the inspection. The KTL will cover those tasks that are complex in nature and have a critical impact on safety of flight. QA will review and update the list at least annually to ensure it encompasses those maintenance actions/functions that directly affect maintenance quality. **NOTE:** The Munitions Storage Area (MSA) tasks will normally be exempt from the KTL, however, MSA tasks will be addressed in the routine assessment list.

4.4.1.1. Qualified QA evaluators will conduct evaluations of tasks on the KTL.

4.4.2. Routine Assessment List (RAL). The QAP will also include a list of maintenance actions/functions that require assessment on a routine basis. The RAL will be developed by QA and includes those tasks that will be assessed on a recurring basis.

4.4.3. The following maintenance actions/functions (if applicable) should be reviewed for possible inclusion on the RAL.

4.4.3.1. Aircraft launch/recovery procedures.

4.4.3.2. Pre-flight/thru-flight/basic postflight inspections.

4.4.3.3. Active aircraft forms.

4.4.3.4. Status reporting.

4.4.3.5. Weapons loading.

4.4.3.6. Weapons maintenance, and munitions build-up.

4.4.3.7. Aircraft servicing.

4.4.3.8. Technical data usage, and technical order management.

4.4.3.9. Tool control.

4.4.3.10. Tail Number Bins (TNB)/Facilitate Other Maintenance (FOM) management.

4.4.3.11. Test Measurement and Diagnostic Equipment (TMDE)

4.4.3.12. Aerospace Ground Equipment (AGE)

4.4.3.13. Housekeeping.

4.4.3.14. Vehicles.

4.4.3.15. Joint Oil Analysis Program (JOAP) procedures (to include sampling procedures, documentation, etc.).

4.4.3.16. End of Runway (EOR) procedures.

4.4.3.17. Mode 4/Radar Warning Receiver (RWR) checks.

4.4.3.18. Core Automated Maintenance System (CAMS) documentation.

4.4.3.19. Egress maintenance (exception will be egress tasks that require mandatory follow-up).

4.4.3.20. Paint/corrosion control maintenance.

4.4.3.21. Survival equipment.

4.4.3.22. Borescope procedures.

4.4.3.23. Flight control rigging procedures.

4.4.3.24. Environmental compliance.

4.4.4. All evaluations listed on the RAL will be identified as Quality Process Evaluations (QPE). The RAL, when completed, provides the basic assessment categories that need monthly assessment, and QA will determine the actual number of assessments they plan to perform. Emphasis should be on the quality of the assessments and not the volume of assessments completed; however, sufficient numbers of assessments need to be accomplished to ensure the health of the organization can be determined. QA will review the RAL periodically to ensure it encompasses those maintenance tasks that should be assessed routinely.

4.4.5. Maintenance Self-Assessment Programs. Air National Guard (ANG) Compliance and Standardization Requirements Lists (C&SRL) will be used as a minimum to establish the program. Flexibility is given to the maintenance activity to determine their individual strategy for what to assess internally.

Maintenance activities develop their own Maintenance Self Assessment Programs IAW chapter 1. Unit level measures collected under this program are provided to QA for validation (to be determined by the LG, stating a minimum percentage of items on each C&SRL) and comparison with other similar measures collected under the QAP.

4.4.5.1. The QA supervisor ensures procedures are developed to monitor the Self-Assessment accomplishment, to include the following guidelines:

4.4.5.1.1. In coordination with the squadron commanders and flight chiefs establish an annual review schedule.

4.4.5.1.2. Provide a method for follow-up on all “Does Not Comply” with responses to assessment.

4.4.5.2. As the focal point for all Logistic Group quality initiatives, Quality Assurance will archive pertinent Higher Headquarters inspection reports, maintenance crosstells, and Logistics Group process action team results. Quality Assurance will maintain a copy of the most current inspection conducted by a numbered Air Force or Major Command until the next one is accomplished. QA is an ex-officio member of all LG process improvement teams and working groups. When requested, QA will serve as a technical representative for any process improvement team activity.

**4.5. Quality Assessment Program (QAP) Evaluations.** QA, in coordination with the functional area supervisors, determine the evaluation requirements. The LG approves the requirements and changes. They include appropriate samples of maintenance processes as well as equipment and maintenance actions. These requirements are reviewed and updated at least annually, or as otherwise required, and distributed to all affected activities.

4.5.1. A Quality Process Evaluation (QPE) is accomplished to determine the condition of aircraft or related equipment. This evaluation is conducted during or after ground handling, servicing, maintenance, inspection, repair, or other directed task using the same technical data required to accomplish the job. Normally, this evaluation does not require parts disassembly, panel removal, or power-on checks. The QPE for -6 T.O. inspections need not include the entire task but may be accomplished by checking only a portion of the task. The QPE may reflect deficiencies to identify specific weaknesses and pinpoint potential areas for improvement. Review available forms and technical data for accuracy, currency, and compliance. A QA representative determines if the aircraft or equipment is maintained according to published technical data and directives.

4.5.2. Management Process Evaluation (MPE) is an evaluation directed by the LG to determine the health of the maintenance complex. The LG determines the frequency, scope, and depth of the evaluation.

4.5.2.1. Before conducting a MPE, review current projects, programs, past performance, and goals of the area to be evaluated. Sources of information for this review may include previous evaluations and staff visit reports, unit self assessments, equipment authorization and inventory documents, deficiency analysis reports, and current directives.

4.5.2.2. Any broken processes identified will be accompanied with a recommendation for an appropriate course of action to fix that process. The process owners develop recommendations with assistance from QA, as required.

4.5.2.3. An AF Form 2519, **All Purpose Checklist** or computer generated product may be prepared for each evaluation to be used as a guide in preparing specific checksheets. If developed, they are reviewed for adequacy and accuracy prior to each evaluation and updated as needed. Checksheets and other publications may be referenced in the AF Form 2519.

4.5.3. A Special Process Evaluation (SPE) is normally a one-time evaluation initiated by Higher Headquarters, System Manager, LG, or the Chief of QA. These evaluations include other evaluations not covered by QPEs or MPEs and may be condition or procedural process oriented, i.e. aircraft condition, maintenance actions, etc.

4.5.4. Acceptance Inspections are done by owning work centers on assigned equipment as directed by the LG. QA works with respective work centers to publish guidance specifying minimum inspection requirements for aircraft/equipment.



**4.6. QA Superintendent Responsibilities.**

- 4.6.1. Makes recommendations to the LG to enhance the quality of maintenance.
- 4.6.2. Establishes and manages the QAP and the Product Improvement Program (PIP).
- 4.6.3. Acts as the primary technical advisor within aircraft maintenance.
- 4.6.4. Evaluates compliance with maintenance management procedures.
- 4.6.5. Manages the Functional Check Flight (FCF) program.
- 4.6.6. Manages the aircraft Weight and Balance Program, is the Weight and Balance Authority (may not be delegated), and may appoint an Alternate Weight and Balance Manager.
- 4.6.7. Manages the T.O. system .
- 4.6.8. Manages the Joint Engineering Data Management Information and Control System (JEDMICS) Program.
- 4.6.9. Ensures a database of quality evaluations is maintained for trend analysis purposes. Monitors trend analysis.
- 4.6.10. Monitors the overall maintenance training program.
- 4.6.11. Controls and issues inspector stamps, when used, for QA personnel.
- 4.6.12. Monitors and/or manages the Repair Enhancement program.
- 4.6.13. Ensure QARs are appointed, when required
- 4.6.14. Monitors maintenance crosstells.
- 4.6.15. Reviews and approves IPIs.
- 4.6.16. Reviews and approves all locally developed checklists, checksheets, forms, preprints and T.O. supplements.
- 4.6.17. Oversees and evaluates the hot refueling training/certification program, when applicable.
- 4.6.18. Reviews and monitors special certification roster for currency, qualification and applicability. Maintains a signed master copy of the SCR.
- 4.6.19. Ensures impoundment/release procedures are developed.
- 4.6.20. Coordinates with higher headquarters, Air Force Materiel Command (AFMC) facilities, contract management administration, and other agencies while representing the LG in formulating authoritative decisions.
- 4.6.21. Reviews and certifies the technical accuracy, applicability and completeness of OIs, policy letters.
- 4.6.22. Ensures QA involvement in all FOD investigations.
- 4.6.23. Evaluates all locally designed special tool or equipment requests.

**4.7. QA Personnel.** QA personnel must have a positive and constructive attitude toward production, management, and maintenance improvement. Carefully analyze QA authorizations and the individuals assigned to ensure an adequate balance of career fields exists to provide an oversight of maintenance functions. Ensure individuals being considered for assignment are highly qualified, including training in techniques used to assess, track, analyze, and revise maintenance processes. These techniques include statistics, quality tools, and team facilitation. Assess their quality awareness training, knowledge of management procedures, communicative skills, and ability to properly analyze assessment results. QA personnel should be encouraged to become trained facilitators.

- 4.7.1. If a functional area does not warrant a full time position in QA, qualified personnel from the functional areas are selected to be QA augmentees. Cross utilization of permanently assigned QA personnel should be encouraged to minimize the use of augmentees. However, QA representatives are required to be task certified in certain AFSCs before they may perform evaluations of these task, for example, egress certification. Responsibilities include:
  - 4.7.1.1. Collecting performance data necessary to generate the metrics for unit level measures.
  - 4.7.1.2. Assisting maintenance activities in process reviews.
  - 4.7.1.3. Assessing the products produced by the maintenance analysis section, and other data to develop proposed process reviews.

4.7.1.4. Validating maintenance quality by sampling the quality of maintenance performed, the condition of assigned aircraft, the serviceability of equipment, and the steps followed to execute the maintenance effort.

4.7.1.5. Recording the results of evaluation/process reviews.

4.7.1.6. Briefing recently completed evaluation/process reviews at the quarterly group quality assessment program meeting.

4.7.2. The QA training program ensures assigned personnel are weapon system qualified and trained on overall QA responsibilities. Document newly assigned QA individuals' training before they do unsupervised evaluations or inspections.

**4.8. General Report Preparation.** Reports may be generated in any format or media, which provide the manager with easy access and interpretation. Report rating and routing is determined locally.

**4.9. Modification Management.** QA submits modification proposals, tracks unit concerns being worked by higher headquarters, and ensures proper implementation of modification directives of TCTOs.

4.9.1. A modification proposal is a recommendation to change the operation, use, or appearance of Air Force equipment. Forward the modification proposal on an AF Form 1067, **Modification Proposal**, to the Major Command (MAJCOM) focal point.

4.9.2. Definitions. There are three classes of modifications, which can be made to Air Force systems.

4.9.2.1. Temporary - 1 (T-1). T-1 modifications temporarily change, add, or remove equipment to provide increased capability for a special mission. T-1 modifications are normally made by the using command for operational reasons, and are not used as substitutes for permanent modifications. T-1 modifications will not be maintained on the system for more than one year without a waiver from the Single Manager (SM). T-1 modifications will not be installed on more than five systems without HQ USAF/LGM approval. Systems will be returned to their original configuration upon removal of the modification.

4.9.2.2. Temporary - 2 (T-2). T-2 modifications are temporary modification required to support Research Development Test and Evaluation (RDT&E), in service testing of potential replacement items (form, fit, and function), and for aircraft/stores compatibility testing. T-2 modifications will normally be accomplished only on programs having approved Program Management Directives (PMDs). No more than five systems may be modified on a temporary basis without SM approval. T-2 modifications will not be maintained on the system for longer than the approved test program requires. Systems will be returned to their original configuration upon completion of the test. They are usually done to:

4.9.2.2.1. A selected set of operational or test systems to evaluate a proposed permanent modification.

4.9.2.2.2. Test or test support equipment to support the testing of an approved acquisition program (e.g., modification of chase aircraft, modification to aerial targets where targets support various tests and are attrited in the test, installation of instrumentation into the system, etc.).

4.9.2.2.3. Test in an operational environment to evaluate operational suitability including reliability and maintainability of a form, fit, and function potential replacement item.

4.9.2.2.4. Evaluate the aircraft/stores capability of an existing or new store on an existing aircraft.

4.9.2.3. Permanent (P). These modifications make permanent changes to correct safety or material deficiencies, to improve reliability and maintainability, or to add or remove capability.

4.9.2.4. Permanent - Safety (P(S)). Safety modifications are permanent modifications which correct materiel or other deficiencies (per T.O. 00-35D-54, *USAF Material Deficiency Reporting and Investigating System*) which could endanger the safety of personnel or cause loss or extensive damage to systems or equipment.

4.9.3. All permanent modifications will be managed as acquisition programs.

4.9.4. The SM of the system being modified is responsible for the engineering integrity of that system. Therefore, all proposed temporary and permanent modifications must be reviewed by the SMs Configuration Control Board (CCB) and be approved by the SM prior to being implemented.

4.9.5. All permanent modifications to systems will include the appropriate modifications to the associated support equipment, computer resources, and system training devices and to the spares supporting those systems or equipment items.

4.9.6. When more than one SM (including commodity SMs) are involved, the PMD will identify the responsibilities for development and installation. Normally, the SM, of the actual Mission Design Series (MDS) being modified, will be designated as the integration lead.

4.9.7. The involved SMs, the using commands, Air Education and Training Command (AETC), and the supporting depots will develop an agreed-to implementation approach and schedule. This approach and schedule establishes all the needed dates and actions.

4.9.8. Modifications to Federal Aviation Administration (FAA) Certified Aircraft. Modifications to Air Force aircraft, which have FAA certification, shall not cause the aircraft to lose its FAA certification. All modifications to such aircraft shall comply with AFD 62-4, *Civil Airworthiness Standards for Aircraft*.

4.9.9. Modifications to Munitions. All proposed modifications to aircraft-carried munitions shall include SEEK EAGLE certification (per AFI 63-104, *The SEEK EAGLE Program*). All modifications to Air Force nuclear munitions or their associated support/training equipment shall be nuclear certified (per AFI 91-103, *Air Force Nuclear Safety Certification Program*). All modification to Air Force non-nuclear munitions or their associated support/training equipment shall be certified (per AFI 91-205, *Non-Nuclear Munitions Safety Board*).

4.9.10. Using Command Initiated Temporary Modifications. Using commands will initiate T-1 and T-2 modifications using an AF Form 1067. The proposed modification must be approved by the using command CCB chairman and then forwarded to the SM for engineering approval. The using command may install the modification only after SM engineering approval is received. The using command will establish internal procedures for documenting and managing the modification. For configuration control and management, a complete copy of the modification documentation will be permanently maintained in the historical records of the systems modified. The using command is responsible for all budgeting and funding of using command-initiated T-1/T-2 modifications.

4.9.11. SM-Initiated Temporary Modifications (T-2 Modifications only). When the SM has engineering responsibility for the item being modified, the SM shall establish internal procedures for documenting and managing the modification. For configuration control and management, a complete copy of the modification documentation will be permanently maintained in the historical records of the systems. When a SM needs to modify a system managed by another SM, the requesting SM will send an AF Form 1067, to the SM with engineering authority for approval. The requesting SM is responsible for funding all T-2 modifications they initiate.

4.9.12. Initiation of Permanent Modifications. The appropriate procedures for initiating a permanent modification depend on the estimated cost of the effort (ref AFI 10-601, *Time Compliance Technical Orders*). Time Compliance Technical Orders (TCTOs) shall be used to document all permanent modifications (ref T.O. 00-5-15). Generally, TCTOs are required only after the Air Force assumes configuration control of a system or commodity. Engineering Change Proposals (ECP) control modifications prior to this point. Prior to implementation, all modifications must be approved by the SM CCB. CCB actions on modification proposals will be documented on AF Form 3525, **CCB Modification Requirements and Approval Document**. This form is produced electronically by the Modifications Management System, D087L. The D087L system is available for use by all modification managers in AFMC, and the data is available Air Force wide. Configuration information will be processed and reported in the Generic Configuration Status Accounting Subsystem (GCSAS). The GCSAS is a single unified information source for all Air Force military system configuration status accounting. GCSAS is a subsystem of the Reliability and Maintainability Information System (REMIS) and will provide cradle-to-grave tracking of serially controlled configuration items.

4.9.13. **Safety Modifications.** Safety modifications shall take priority over all other modifications for funding and implementation. For each safety modification, the SM will conduct a risk assessment. All safety modifications will be accomplished in the minimum amount of time required to ensure a safe and operationally effective fix. The goal for accomplishing engineering, test, production, and complete installation of the modification on the fleet of systems/equipment is 18 months. A modification must meet the following criteria to qualify as a safety modification: the deficiency which the modification is to correct must have caused or could cause loss of, or serious injury to, personnel or loss of, or extensive damage to, systems/equipment. To be designated as a safety modification, a request for safety modification designation must be forwarded from the SM for approval by the Commander of the lead command and the Director of Air Force Safety. If the deficiency does not cause the fleet to be grounded, the approving Commander must provide rationale for the safety designation.

**4.10. TCTO Monitoring.** QA is responsible for monitoring the progress of TCTOs, one-time inspections (OTI), or command modifications to unit maintained equipment. QA responsibilities include:

4.10.1. Reviews TCTOs, OTIs, and modifications to determine their applicability to unit maintained equipment. QA is the sole authority for determining applicability.

4.10.2. Evaluates TCTOs, OTIs, or modifications by reviewing the technical, managerial, and documentation aspects, and reports any deficiencies.

4.10.3. Coordinates with Supply and munitions TCTO monitor to ensure all assets on the base affected by the TCTO, OTI or modifications are worked. Includes all assets in the repair cycle.

4.10.4. Provides a working copy of the TCTO, OTI or modification to PS&D and appropriate work centers.

4.10.5. Participates in all TCTO planning meetings and will be notified by the performing workcenter when work is started on the first TCTO, OTI, or modification for aircraft and equipment.

4.10.6. Monitors compliance of TCTOs and determines evaluation coverage which is directly related to the complexity of the TCTO as well as to the criticality of the system or the component to be modified. QA monitors the quality of the first job and performs kit proofing as required. Report any deficiencies to appropriate agencies. Remaining jobs will be monitored for timeliness.

**4.11. Product Improvement Program (PIP).** Identifying deficiencies in current equipment together with the day-to-day maintenance data reporting, provide an effective method of improving the Reliability and Maintainability (R&M) of equipment. QA is the focal point for all deficiency reporting, technical data changes, aircraft maintenance suggestions, and product improvement programs.

4.11.1. QA reviews, processes, and monitors all AFTO Form 135s, **Source, Maintenance and Recoverability Code Change Request.** Use a log or an automated product to maintain status.

4.11.2. Deficiency Reporting is the processing and controlling of reports prescribed by T.O. 00-35D-54 and T.O. 00-5-1. Use a log or an automated product to maintain status of reports submitted. Units may publish specific procedures for Product Quality Deficiency Report (PQDR) completion. For deficiency reporting, QA:

4.11.2.1. Ensures the deficiency is adequately defined, meets the criteria of the governing directive, and is investigated (when necessary).

4.11.2.2. Screens for unit factors that may contribute to the deficiency. Acts locally on unsatisfactory conditions resulting from local procedures or a lack of technical capability to ensure these deficiencies are corrected.

4.11.2.3. Maintains a file of equipment deficiencies, which do not qualify as PQDRs for possible submission to the weapon system Product Improvement Group or the Air Force REP, as applicable.

4.11.2.4. Oversees exhibit processing.

**4.12. Deficiency Assessment.** Assessing Reliability and Maintainability (R&M) concerns is twofold. First, all unit R&M deficiencies are reviewed to determine those caused by local factors versus those beyond the unit's control. Second, maintenance and supply trends are reviewed to identify repairs, which consume a high amount of work hours. QA:

4.12.1. Performs first hand observations of component problems to better understand factors contributing to the deficiency.

4.12.2. Reports unit factors contributing to the deficiency to the appropriate supervisor for resolution.

**4.13. Technical Order Distribution.** The Technical Order Distribution Office (TODO) accounts and subaccounts are set up IAW T.O. 00-5-2. All initial distribution and requisition requirements are sent through QA for processing. Based on requirements, QA sets up T.O. series initial distribution requirements. This ensures receipt of TCTOs that apply to equipment maintained, owned, or operated within the logistics/maintenance complex. If the Wing has implemented the JCALS program, or assumed Wing TO responsibilities, QA will ensure they are on requirements for all TCTOs series utilized within the Wing.

4.13.1. As a minimum, TODO maintains a file of general and procedural type T.O.s and a copy of all TCTOs for equipment owned, operated, or maintained in the unit. Specialized and overhaul T.O.s are maintained by the prime user or TODO.

4.13.2. TODO prepares and distributes a list of all changes and revisions to technical data. This list will be published (may be electronic) as part of the Weekly Maintenance Plan.

4.13.3. TODO periodically spot checks work center T.O. files, and follows up within 90 days when Broken Processes are noted. When Processes needing improvement are discovered, the follow up will be at the TODOs discretion. .

4.13.4. Local workcards, T.O. supplements, checklists and any other T.O. related reference material will be controlled IAW T.O. 00-5-1 and 00-5-2.

4.13.5. Date stamp all TCTOs with the date received to establish the start of the TCTO compliance period. The compliance period for the electronically transmitted TCTOs begin at the time the message is received by TODO.

4.13.6. TODO will reduce hard copy requirements whenever possible.

**4.14. Functional Check Flight (FCF).** The OG and LG have joint responsibility for the FCF program. The requirement for an aircraft FCF is based on technical data and decisions exercised by commanders at all levels through their maintenance officers. The guidance contained in this instruction is designed to be used in conjunction with the additional guidance contained in the following directives: AFI 21-101, *Maintenance Management of Aircraft*; AFI 11-401, *Flight Management*; AFI 11-206, T.O. 1-1-300, *Acceptance/Functional Check Flight and Maintenance Operational Checks*, T.O. 00-20-5, *Aerospace Vehicle/Equipment Inspection and Documentation*, and applicable -6 and -1 technical orders. This instruction does not provide single source guidance for the implementation and execution of the FCF program. *EXCEPTION.* Units with B-1, C-21, C-22, C-26, C-130, C-141, C-5, and KC-135 series aircraft rarely perform FCFs, and are exempt from the following requirements contained in this instruction: initial checkouts, initial certification letters, annual certifications, and FCF currency requirements. When these aircraft require a FCF, the Operations Group Commander issues temporary written certification designating the most highly qualified crew available. OG/CCs, FCF Officer In Charge (OIC), and LG/QA ensure crews are thoroughly briefed on specific FCF requirements and procedures. File certification letters with the FCF program manager.

4.14.1. Responsibilities. Due to the cross-functional nature of the FCF program, effective development and execution of the program requires close coordination between operations and maintenance. Unit LG and OG commanders will appoint specific program managers to oversee the functions of the FCF program that specifically relate to their organization. For the LG this will be the Chief of QA. Jointly established local procedures will be developed and implemented on all FCFs. Operations and Logistics Group Commanders are responsible for ensuring compliance with these procedures.

4.14.1.1. Operations Group FCF OIC. This individual is FCF-qualified in a unit mission aircraft, attends the Aircraft Maintenance Officer Course (accelerated), has previous FCF experience, and can serve as checkout pilot in mission aircraft.

4.14.1.2. LG/QA, in conjunction with the operations FCF OIC, is responsible for implementing an effective FCF program.

4.14.2. The operations FCF OIC will ensure that the following crew requirements are met.

4.14.2.1. Normally the number of FCF crews does not exceed four per squadron. Units with unique-mission requirements may waive the number of assigned crews at the discretion of the OG/CC. Crew members required to perform duties/events directed in the FCF flight profile are certified on a locally developed certification letter. This certification is accomplished after the crew member performs the initial checkout and meets flying hour requirements.

4.14.2.2. If the necessity arises for an FCF during a TDY when an FCF crew is not available, the OG/CC may issue temporary certification, designating the most highly qualified crew available to perform such duties. In addition, OG/CCs ensure crews are briefed on the provisions of T.O. 1-1-300 and are completely familiar with local FCF procedures.

4.14.2.3. The initial checkout and annual certification program for applicable crew members consists of, but is not limited to:

- A comprehensive briefing by the Operations Program Manager on the following:
- Procedures listed in this publication.
- The publications listed in this section.
- Local FCF procedures for the type of aircraft being flown.
- The applicable -6 worksheets.
- FCF procedures for aircrew training devices (ATD) when devices are possessed by the wing.
- Map of local FCF area or route of flight.

4.14.2.3.1. A complete FCF aircraft flight profile (except helicopters) with a certified FCF pilot. Checkout may be accomplished in conjunction with an actual FCF. A chase aircraft not requiring an FCF or operational check is used for single seat aircraft. Crew members for multiple seat aircraft fly a complete FCF profile with an FCF-certified crew member for the corresponding crew position if aircraft size or seating capability permits.

4.14.2.4. If an ATD is possessed by the wing, a complete ATD FCF profile is flown under the supervision of a certified FCF pilot prior to the aircraft flight.

4.14.2.5. Additional FCF checkout sortie requirements are determined locally, based on the complexity of the aircraft and the qualifications/proficiency of the prospective FCF crew member.

4.14.2.6. FCF pilot currency for single seat aircraft is 120 days. To update currency, FCF pilots may accomplish a complete ATD FCF profile or an actual FCF flight. Non-current FCF pilots will not perform FCF duty's until currency is regained. To regain currency, FCF pilots accomplish a FCF in the ATD with a certified FCF pilot. If an ATD is not possessed by the unit, currency may be regained by accomplishing an academic review of the requirements of paragraph 4.14.2.3 and applicable emergency procedures with a current FCF pilot or operations squadron supervisor. Currency may also be regained by flying an FCF profile with a certified FCF pilot, either as a chase or in the rear seat of a two-seat model (if applicable). If an FCF pilot does not accomplish an ATD or aircraft FCF profile for more than 1 year, the initial check-out procedures in paragraph 4.14.2.3 will be accomplished.

4.14.2.7. Any FCF crew member, who loses AFI 11-401 aircraft qualification for over 6 months, will not perform FCF duties until reaccomplishment of initial checkout.

4.14.2.8. For single engine aircraft, pilots maintain Simulated Flameout (SFO), landing, currency IAW applicable 11-MDS series guidance.

4.14.2.9. Use the following minimum hourly criteria, including student time, to designate pilots to perform FCF duties.

4.14.2.9.1. 750 hours total and 200 hours first pilot PAA time.

4.14.2.9.2. 650 hours total and 300 hours first pilot PAA time.

- 4.14.2.9.3. 575 hours total and 400 hours first pilot PAA time.
- 4.14.2.9.4. Helicopter pilots designated as FCF co-pilots will be selected by Unit Commander and will follow minimum qualification criteria listed below:
  - 4.14.2.9.4.1. Be current and qualified with a minimum of 200 hours total time and 100 hours assigned airframe time.
  - 4.14.2.9.4.2. Complete unit FCF Training Program.
- 4.14.2.10. Flight engineers/flight mechanics must have at least 1250 hours total time and 250 hours PAA time. *EXCEPTION.* Helicopter flight engineers must be current and qualified in type aircraft to be checked.
- 4.14.2.11. Other crew members are current and qualified in the type aircraft and crew position to be checked.
- 4.14.2.12. The crew size for an FCF is the minimum crew necessary to perform required maintenance checks and is never less than the minimum crew as stated in the applicable -1.
- 4.14.2.13. OG/CCs possessing newly assigned aircraft may waive the minimum hourly criteria of this publication (up to 1 year from the start of unit conversion) and select the most qualified crew members for FCFs.
- 4.14.3. Flight Requirements:
  - 4.14.3.1. Do not shut down engines while airborne unless specified in the -6 T.O.
  - 4.14.3.2. Do not fly FCFs in conjunction with other missions or training requirements, unless waived by provisions in T.O. 1-1-300.
  - 4.14.3.3. Follow weather conditions contained in T.O. 1-1-300 at all times unless aircraft are urgently required for operational commitments. Waiver provisions are outlined in T.O. 1-1-300 for the type and model of aircraft involved.
  - 4.14.3.4. Conduct FCFs during daylight hours only, except for aircraft with four or more engines, unless waived by provisions specified in T.O. 1-1-300.
  - 4.14.3.5. Fly and report supersonic flights IAW AFI 13-201, *Air Force Airspace Management*.
  - 4.14.3.6. Fly FCFs using radar control to the maximum extent possible. Whenever practical, an IFR clearance is filed (except helicopters). In cases where FCF areas are not controlled by ground radar agencies, radar monitoring is used, if available.
  - 4.14.3.7. Follow aircraft -6 T.O. warnings and cautions restricting FCF profile at particular phases of the FCF. Local procedures for FCF profiles include the applicable -6 restrictions.
  - 4.14.3.8. Fly FCFs for a single engine change on a two-engine aircraft if that aircraft will next fly an extended over-the-water flight, i.e., overseas deployment. This applies to engines with no operating time since major maintenance. It does not apply to engines obtained from donor aircraft with established operating time.
  - 4.14.3.9. Require a clean configuration whenever FCFs are flown for flight controls, fuel controls, or engine changes. Do not remove fixed wing pylons, fixed wing tip tanks, and fixed external stores unless they interfere with fuel scheduling, aerodynamic reaction, air loading, signaling propagation, etc.
- 4.14.4. Unit Procedures. As a minimum, units establish and publish local procedures to include, when applicable:
  - 4.14.4.1. Fuel Load.
  - 4.14.4.2. Expanded preflight check by the aircrew.
  - 4.14.4.3. Ground procedures (compass swing, taxi check).
  - 4.14.4.4. Radio procedures.
  - 4.14.4.5. Radar control procedures.
  - 4.14.4.6. Procedures to enter test area.
  - 4.14.4.7. Control bailout area.
  - 4.14.4.8. Control jettison area.
  - 4.14.4.9. Emergency landing base.
  - 4.14.4.10. Debriefing procedures.
  - 4.14.4.11. Procedures to adequately prepare, perform, and debrief ATD FCFs.

4.14.5. The LG/QA Functional Check Flight Program Manager:

4.14.5.1. Monitors all FCFs according to the appropriate -6 technical order, T.O. 1-1-300, and other pertinent directives.

4.14.5.2. Notifies logistics and operations scheduling as soon as possible when requesting FCF crews.

4.14.5.3. Ensures each FCF crew is briefed on the documentation requirements for the AFTO Form 781 series and the -6 T.O. FCF checklists, when applicable.

4.14.5.4. Ensures an information file for briefing FCF flight crews is maintained. As a minimum, the file contains the following items:

4.14.5.4.1. Mission profile for each type of assigned aircraft, consisting of checks to be accomplished, presented in consecutive order.

4.14.5.4.2. Unit directives concerning FCF procedures.

4.14.5.4.3. A FCF checklist for each type of assigned aircraft.

4.14.5.4.4. T.O. 1-1-300.

4.14.5.4.5. List of authorized FCF crewmembers signed by the Operations Group Commander.

4.14.5.5. Reviews the FCF checklist and the aircraft forms with the FCF crew during debriefing to determine all requirements were accomplished. Tape recorders may be used IAW AFI 11-206, *General Flight Rules*, to provide detailed accounting of in-flight discrepancies, assist troubleshooting and aid in debriefing. Forwards the completed FCF checklist to the appropriate PS&D for filing in the document file of the aircraft. After corrective action is complete, reviews AFTO Forms 781A for adequacy of the corrective action.

4.14.5.6. Reviews the AF Form 2400, **Functional Check Flight Log** or similar automated product, monthly for trends indicating problems requiring further analysis or corrective actions. If an automated product is used, all information currently tracked on the AF Form 2400 is tracked in the computer.

4.14.6. When an FCF is required on transient aircraft, QA at the transient base serves as the focal point for coordination between the owning organization, the host operations group, and the transient alert section, as required.

4.14.7. FCF Aborts. An air abort due to a condition other than the one that generated the FCF is not counted as an FCF non-release, provided the original condition requiring the FCF checked good. Enter new discrepancies on AFTO Forms 781A.

4.14.8. Waivers. OG/CCs may authorize temporary waivers to this publication, for aircrew qualification, when operational requirements dictate. Permanent waivers, not otherwise granted in this publication, require ANG/DO and ANG/LG approval. Requests for permanent waiver of FCF aircrew qualifications contained in this publication are normally submitted through channels to ANG/DOO.



**4.15. High Speed Taxi Checks.** High speed taxi checks are considered to be any ground operational check requiring the aircraft to be moving at higher than normal taxi speeds. When a maintenance ground operational check requires aircraft movement at higher than normal taxi speeds, the aircraft is normally flown. FCFs are normally used to accomplish these checks. However, LGs, in coordination with the OGs, have the option to authorize high speed taxi checks. If this option is exercised, process the aircraft forms through Quality Assurance using FCF procedures. Perform high-speed taxi checks with qualified FCF aircrew's IAW applicable aircraft -1 and maintenance T.O.s. To minimize brake and tire wear, aircraft are configured with the minimum fuel practical to accomplish high-speed taxi checks. However, enough fuel is on-board to execute a takeoff, normal pattern, and landing with applicable reserves should unexpected circumstances dictate getting the aircraft airborne. Operations and Quality Assurance jointly develop an aircrew briefing checklist specifically for high speed taxi checks, to include the required FCF briefing items and pertinent warning, cautions, etc. For example, allow sufficient cooling time for aircraft brakes prior to additional taxi checks. Aircrews performing high speed taxi checks fill out a take off data card to indicate the highest speed expected to ensure sufficient stopping distance is available for existing runway conditions without exceeding normal brake energy limits. For aircraft equipped with tail hooks, taxi checks of speed 100 knots or above require the tail hook to be lowered once the pilot begins to initiate braking action. For taxi checks below 100 knots, the pilot lowers the tail hook if there is any doubt about stopping the aircraft within the remaining runway.

**4.16. Operational Check Flights (OCF)/In-Flight Checks (IFC).** Fly OCFs when an operational check is not listed as a -6 FCF requirement and when either of the following conditions exists:

- 4.16.1. Test equipment does not exist to perform the operational check on the ground.
- 4.16.2. An in-flight operational check is required by -1 and -2 technical data.
- 4.16.3. Units will establish and publish local procedures for OCFs, when used.

**4.17. Weight and Balance.** QA manages the Weight and Balance Program. The Weight and Balance Manager ensures compliance with appropriate T.O. procedures for weighing aircraft and maintains required documents. Specialist support is provided as necessary to assist in the inventory, removal, or installation of equipment. The weight and balance technician verifies scale readings and performs actual computations on the weight and balance documents. As the Weight and Balance Authority, the QA Supervisor will ensure that:

- 4.17.1. Procedures are established for routing completed TCTO and modification information for weight and balance changes.
- 4.17.2. Basic weight and moments are provided to Operations for mission planning.
- 4.17.3. Weight and balance inventories are completed according to applicable directives and upon return to home station from any ALC or contractor facility where extensive maintenance was performed. Complete weight and balance inventories prior to the first flight after arrival.
- 4.17.4. All assigned aircraft are weighed according to applicable directives. Keep weight and balance documents required by T.O. 1-1B-50, *Basic Technical Order For USAF Aircraft Weight & Balance*, for each assigned aircraft. If approved, use an automated weight and balance system. If an approved automated weight and balance system is used, keep a back-up copy of all weight and balance documents.
- 4.17.5. Inspection of weight and balance documents before flight when locally accomplished modifications affect the basic aircraft weight and moment. Review computations for accuracy.
- 4.17.6. Weight and balance handbooks will be managed IAW T.O. 1-1B-50.

**4.18. Impoundment/Release Authority.** The LG or designated representative has the authority to impound and release aircraft and equipment. Impoundment is an intensified process of investigation due to system or component malfunction or failure of a serious or chronic nature. Personnel access must be controlled. The QA supervisor ensures procedures are developed to control the Impoundment/Release Programs, to include the following guidelines:

- 4.18.1. Impound aircraft with unusual operating performance or system malfunction.

- 4.18.2. Establish local procedures for aircraft impoundment and home station notification.
- 4.18.3. Assess the aircraft's condition. Determine need and authorize a "one-time flight" according to T.O. 00-20-1 if necessary.
- 4.18.4. Flight Control Malfunctions. Arrange special care to completely diagnose and correct flight control malfunctions. To ensure proper handling, units shall publish directives that address as a minimum:
  - 4.18.4.1. Team and individual integrity to provide continuity when troubleshooting major flight control malfunctions.
  - 4.18.4.2. Skill-level, experience, and training requirements of team members and individuals assigned to work major flight control malfunctions.
  - 4.18.4.3. Requirements for use of checklists to document sequence of actions.
  - 4.18.4.4. Procedures for managing repeat and recurring discrepancies, uncommanded inputs reportable under the provisions of AFI 91-204, *Investigating and Reporting Mishaps*, and problems occurring in the direct manual mode or occurring where the auto mode fails to disengage.
  - 4.18.4.5. The processes for reviewing and clearing Red X discrepancies related to flight control malfunctions and impoundment.

**4.19. Quality Assurance Representative (QAR).** If a Contractor Logistic Support (CLS) aircraft or Contract Field Team (CFT) is assigned, a QAR will be appointed. A QAR is the on-site government inspector and is the liaison between contractor and government personnel at each applicable base. Through administrative actions, they coordinate, process, and review documents required to ensure successful implementation of the contract. They evaluate and certify the contractor's ability in fulfilling the requirements of the contract statements of work. They ensure contract deviations are properly documented and provided to the site manager for necessary corrective action and coordination. Through system malfunctions or anomalies, the QAR determines the need for government requested special inspections. They may coordinate all requests for additional support for the contractor with the host and submit recommended contract changes through appropriate channels. They may review or coordinate on host-tenant support agreements affecting contractor support.

4.19.1. Wings will:

- 4.19.1.1. Appoint QARs. QARs will attend formal training. Course numbers: L4OST64P1 009 Quality Assurance Evaluation for Service Contracts (1 week) and L5OZH38M3 021 Quality Assurance Surveillance Plans For Commercial Activities (2 days) are suggested courses. For CLS aircraft, QARs will attend contract familiarization and airframe familiarization courses.
- 4.19.1.2. Forward a QAR letter of appointment to ANG/LGM and appropriate ALC.
- 4.19.1.3. Ensure services, equipment, and materials, etc. are not provided to the contractor at government expense unless they are authorized in the statement of work or host-tenant support agreements.
- 4.19.1.4. Ensure contractor personnel are adequately trained in all local requirements to include, but are not limited to, all applicable safety, environmental, and AFOSH standards.
- 4.19.1.5. Establish a Quality Plan (QP). The QP is the unit's written guidance to include, as an example; duties and responsibilities, inspections to be accomplished (as identified by the QAR), FCF procedures, weight and balance, impoundment, and training. These are examples only and are not all-inclusive or required in all circumstances.
- 4.19.1.6. Develop procedures for support of continuing operations in the event of disruption, termination, or default of contract aircraft maintenance.
- 4.19.2. QAR Duties and Responsibilities:
  - 4.19.2.1. Maintain an updated copy of the respective contract.
  - 4.19.2.2. Maintain sufficient files to provide an audit trail of all contractual and QAR functions.
  - 4.19.2.3. Familiarize themselves with applicable maintenance manuals, safety manuals, contract requirements, and other required regulations to effectively perform all assigned QAR duties. Program Management Review (PMR) provides contractual updates and should be attended by QARs.
  - 4.19.2.4. Brief all affected personnel on contract requirements.

- 4.19.2.5. Document contractor deficiencies on AF Form 714, **Customer Complaint Record**, or equivalent, as designated in the quality plan. Deficiencies once documented need only leave the base if satisfactory corrective action is not taken by the contractor and the QAR needs further assistance.
- 4.19.2.6. Coordinate on the Quality Plan and identifies specific inspections to be accomplished.
- 4.19.2.7. Appoint Quality Assurance Evaluators (QAE) as required,

**4.20. Maintenance Functions Located in Operations.** When maintenance functions are located in the Operations group (i.e. Survival Equipment, Transient Alert) QA provides technical support and conducts evaluations.

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## Chapter 5

### AIRCRAFT GENERATION SQUADRON (AGS)

**5.1. General.** The Aircraft Generation Squadron is primarily responsible for the launch, service, on-equipment repair, inspection, and recovery of primary mission aircraft. The squadron is organized into sortie generation and sortie support flights. Mission Design Series (MDS) peculiarities will determine exceptions to the general organization of the AGS. May manage the wash rack, when assigned.

**5.2. Production Superintendent.** The Production Superintendent enforces safe maintenance practices, manages the overall maintenance effort and is responsible for squadron maintenance production. At local option, Expediter and Production Superintendent duties may be combined, provided all duties of both functions are performed. The Production Superintendent:

- 5.2.1. Manages and coordinates through MOC, the maintenance production effort by assigning priorities to meet the flying and maintenance schedules. Aggressively works Not-Mission Capable (NMC) aircraft.
- 5.2.2. Initiates action to resolve personnel shortages and coordinates requirements with the MOC, when requirements are beyond the unit's capability.
- 5.2.3. Participates in establishing the Monthly and Weekly Maintenance Plans. Attends and/or conducts the daily maintenance planning meeting.
- 5.2.4. Directs cannibalization on assigned aircraft and coordinates the action with the MOC and Supply.
- 5.2.5. Maintains a current on-base disaster map with cordon overlay and appropriate checksheets outlining duties during disasters or exercises.
- 5.2.6. Understands and executes specific disaster control duties including the provisions of AFI 32-4001, *Disaster Preparedness Planning and Operations*, with regard to the movement of aircraft, SE, and evacuation of flightline personnel.
- 5.2.7. Becomes familiar with Emergency War Order (EWO) and contingency plans.
- 5.2.8. Understands aircraft status reporting as covered in AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*, and applicable supplements. Works closely with Expeditors and the MOC to ensure actual aircraft status matches aircraft status reported in the automated reporting system.
- 5.2.9. May verify MICAP requisitions.

**5.3. Flightline Expediter.** Expeditors ensure aircraft are ready for flight by controlling and directing resources allocated by the Production Superintendent to meet the flying schedule and other maintenance requirements. Expeditors determine aircraft status and coordinate with the Production Superintendent and MOC. The Production Superintendent supports expeditors with resource requirements within the control of the squadron and coordinates with the MOC for all other requirements. Expeditors possess overall knowledge of aircraft systems and have the ability to manage personnel and control work. Expeditors operate from radio-equipped vehicles and are normally present on the flightline anytime maintenance is being performed and during all aircraft launches/recoveries. During these times expeditors will enforce safe maintenance practices. Expeditors track all discrepancies identified during "Red Ball" maintenance and take proper follow-up action. Working with the MOC, expeditors track personnel dispatched to aircraft and coordinate job starts and completions. When applicable, expeditors order parts for assigned aircraft by radio. The document number is relayed to the specialist, if appropriate to the crew chief, and to the MOC. Keep records of all parts requests. Units determine the number of expeditors. Expeditors may verify MICAP requisitions.

**5.4. Aircrew Debriefing.** The section thoroughly debriefs aircrews, documents aircraft conditions, and collects in-flight data. At local option, the overall management responsibility for debrief may be assigned to the MOC or AGS. Debriefing is the focal point for the collection of all in-flight data. Refer to Chapter 3 for more details.

**5.5. Sortie Generation Flight.** This flight may consist of Aircraft, Specialist, Weapons, and Mission Systems Elements, when authorized.

**5.6. Aircraft Element.** Normally consists of crew chiefs and aircraft specialists. Common tasks are servicing, maintenance, preflights, basic postflights, thruflights, home station checks, special inspections, corrosion control, cleaning, ground handling, launch and recovery of aircraft, troubleshooting and adjustment, and alert duties on assigned aircraft. In addition to the common responsibilities in Chapter 2, the element supervisor:

5.6.1. Periodically reviews PRDs and ensures proper maintenance actions are taken.

5.6.2. Periodically reviews and reconciles the cannibalization actions with aircraft AFTO Form 781s series.

5.6.3. Assigns personnel to fill crew chief positions.

5.6.4. Alert Force. Provides for immediate launch of aircraft in support of strategic, tactical, or air defense missions as well as maintenance and support of non-alert aircraft. The period of time personnel spend on alert duty depends upon the unit mission. Personnel must be returned to other maintenance functions periodically to ensure proficiency and training are not neglected.

**5.7. Crew Chief.** Crew chiefs perform, manage, coordinate, and supervise (as applicable) all maintenance on assigned aircraft. The crew chief keeps the element supervisor informed of aircraft status, and coordinates with Expeditors and Production Superintendent for maintenance requirements. In addition, crew chiefs:

5.7.1. Document and identify maintenance and support requirements to the expeditor, Pro Super or element supervisor.

5.7.2. Maintain accurate aircraft forms.

5.7.3. Determine aircraft condition from aircrew.

5.7.4. Take oil samples and complete appropriate documentation, as required.

5.7.5. Attend pre/post dock meetings for assigned aircraft. At local option, accompany their aircraft through scheduled inspection, and act as the inspection coordinator when required.

5.7.6. Are responsible for on-aircraft -21 equipment inventories when this responsibility is not assigned to another function.

5.7.7. Perform aircraft record checks.

- 5.7.8. Inventory aircraft returning from deployed operations. On completion of the inventory, ensure aircraft forms are correct and complete.
- 5.7.9. Ensure timely corrective action is taken on all delayed discrepancies.
- 5.7.10. Maintain aircraft technical order files current and complete when stored on the aircraft.
- 5.7.11. Perform engine runs, usually. .
- 5.7.12. Accumulate knowledge of the aircraft's long-term problems, and take steps to fix those problems.
- 5.7.13. Qualify on at least all servicing tasks and powered and non-powered AGE operations.
- 5.7.14. Order and document parts requirements.
- 5.7.15. Ensure ADS is completed and accurate in a timely manner.
- 5.7.16. Ensure safe maintenance by practicing and training others to adhere to technical data and approved safe maintenance practices.
- 5.7.17. Perform as OJT trainers/certifiers, as required.

**5.8. Specialist Element (when assigned).** Common tasks for this element are aircraft systems troubleshooting and adjustments, on-equipment repairs, off-equipment repairs (as required), component removal/replacement, operational checks, special inspections, and performing applicable TCTOs. The extent of CUT tasking will be locally determined. Further shop responsibilities are found in para 6-4.

5.8.1. The Specialist Element functions include:

5.8.1.1. Initiates cross-talk with applicable maintenance functions to obtain information on system or component repeat, recurring, and CND trends.

5.8.1.2. Performs reprogramming of avionics systems.

5.8.1.3. Maintains the following systems:

5.8.1.3.1. Weapons Control Radar and Inertial Navigation.

5.8.1.3.2. Instrument and Flight Control.

5.8.1.3.3. AVTR/CAVR.

5.8.1.3.4. Guidance and Control.

5.8.1.3.5. Communication and Navigation.

5.8.1.3.6. F-15/F-16 LANTIRN.

5.8.1.3.7. Threat Warning and Countermeasures, when applicable.

5.8.1.3.8. Normally loads ECM pods, when assigned.

5.8.2. B-1B specific work centers in the Specialist Element are as follows:

5.8.2.1. Autopilot/Instrument (APINS) Work Center. Performs on-equipment maintenance, on stability augmentation systems, automatic flight control systems, secondary attitude heading reference systems, fuel center of gravity management systems, crash survivable memory systems, terrain-following systems, central air data computers, pitot-static systems and aircraft instrument systems.

5.8.2.2. Offensive Avionics Systems (OAS) Work Center. Performs on-equipment maintenance on inertial navigation systems, Doppler systems, offensive radar systems, electronic multiplexing systems, video recording systems, central integrated test systems and data transfer unit systems, power control assemblies, and the avionics control unit complex.

5.8.2.3. Defensive Avionics Systems (DAS) Work Center. Performs on-equipment maintenance on electronic warfare systems, expendable countermeasure systems, rendezvous beacon systems, interphone, Tactical Air Navigation (System) (TACAN), Instrument Landing System (ILS), Identification Friend or Foe (IFF) and communication systems.

**5.9. Weapons Element.** This element normally consists of two functional areas, Weapons Loading and Armament Systems. Common tasks are aircraft weapons systems troubleshooting and adjustments, on/off-equipment repairs, tests and inspection, component installation/removal, and aircraft munitions servicing. The extent of CUT tasking will be determined locally. In addition to the common responsibilities in Chapter 2, the Weapons Element Supervisor:

5.9.1. Recommends the most qualified load crews as lead crews.

5.9.2. Maintains load crew integrity during training and evaluations to the maximum extent possible.

5.9.3. Ensures load training aircraft requirements, coordinating with Weapons Standardization, and load crew proficiency evaluation schedules are developed. These schedules are included in the Weekly and Monthly Maintenance Plans. Ensures training aircraft are properly configured to support load training requirements prior to scheduled training sessions.

5.9.4. Designates Weapons Expediter/Dispatcher, when necessary.

5.9.5. Ensures Locally Manufactured Equipment (LME), not included in technical data, is approved for use.

5.9.6. Ensures load crew certification records/automated products are sent with load crews to TDY locations if loading tasks are to be performed.

5.9.7. Ensures the Weapons Element maintains the capability to load all tasked munitions and training items, and maintain aircraft weapons release and gun systems.

5.9.8. Reviews the Unit Committed Munitions List (UCML).

5.9.9. Ensures proper accounting of assigned munitions items, to include daily reconciliation procedures.

5.9.10. Develops procedures for tracking weapon expenditures, if required.

5.9.11. Ensures all in-use Alternate Mission Equipment (AME) is tracked by aircraft tail number.

5.9.12. Coordinates munitions load training requirements with the Munitions Element Supervisor.

5.9.13. Ensures a checklist for each Primary Munitions (PM) and Support Munitions (SM) is on hand for each assigned load crew.

5.9.14. Routes all loading technical data AFTO Form 22s, **Technical Order System Publication Improvement Report and Reply**, to the WWM for review.

5.9.15. Ensures accomplishment of supervisory postloads and maintenance inspections.

5.9.16. Ensures accomplishment of aircraft -6 armament system inspections (except phase/HPO).

5.9.17. Ensures updates of Normally Installed Equipment (NIE) locations in the automated management system.

5.9.18. Ensures personnel receive required prerequisite training prior to entering initial load crew training (e.g. cockpit familiarization, fire fighting, AGE, etc.)

5.9.19. Ensures completion of on-equipment functional checks on all AME and NIE installed as a result of transfer or acceptance inspection actions.

5.9.20. Ensures accomplishment of appropriate follow-up actions for all armament system malfunctions. Monitors actions taken by supporting agencies on dispensers, suspension equipment, training munitions, etc. involved with specific system malfunctions.

5.9.21. Works with squadron maintenance supervisors to balance grades and skill-levels between the weapons sections and armament systems.

5.9.22. Coordinates with the Wing Weapons Manager (WWM), Munitions Storage Area supervisor and the Weapons and Tactics Officer on the Unit Committed Munitions Listing (UCML) on at least an annual basis. They as a collective group will develop the units Standard Configured Load (SCL), utilizing the UCML as the basis of information.

**5.10 Weapons Loading.** The LG may authorize the use of non-2W1X1 personnel as load crew members but not load crew chiefs. Personnel assigned to loading:

5.10.1. Load and unload munitions in support of daily/contingency operations. Certification and qualification requirements for these operations are specified in Chapter 7.

5.10.2. Install and remove armament related suspension equipment, tow target systems, when assigned, launchers, adapters, etc. on assigned aircraft to support configuration requirements for daily/contingency operations.

5.10.3. Perform functional/stray voltage checks required for loading operations.

5.10.4. Are certified before performing loadings of conventional munitions, unless loading under the direct supervision of a minimum of two certifying officials. Exception: If only one of the crew is not certified, then only one certifying official is required.

5.10.5. Are not certified on more than two types of aircraft, except during munitions/aircraft test programs.

- 5.10.6. Provide assistance to the Armament Systems, when required.
- 5.10.7. Load crew size is set by the gaining command with approval of ANG/LGM. The load crew chief is to have a 2W151 AFSC as a minimum.
- 5.10.8. Load crews for different aircraft may vary in size and consist of three or four persons. The sizes for various MDS are:
  - 5.10.8.1. Three-member crews--A/OA-10, F-15, and F-16.
  - 5.10.8.2. Four-member crews--B-1.

**5.11. Load Crew Chief.** The Load Crew Chief is responsible for armament systems maintenance and loading of assigned aircraft. The Load Crew Chief controls all actions concerning the aircraft during loading and unloading except Integrated Combat Turnaround (ICT) and ensures no maintenance is performed on an aircraft which interferes with normal loading or unloading operations.

- 5.11.1. Supervises the loading and unloading of only one aircraft at a time.
- 5.11.2. Ensures required safety equipment is available, serviceable, and, if applicable, installed.

**5.12. Armament Systems.** The Armament Systems performs on-equipment and off-equipment maintenance for assigned aircraft armament systems, guns, pylons, racks, launchers, and adapters. An NCOIC will be assigned for overall section management. Loading/Armament Support personnel may be assigned any or all of the duties specified below:

- 5.12.1. Performs aircraft armament systems functional checks and associated -6 inspection requirements on in-use AME and NIE.
- 5.12.2. Boresights aircraft guns and gun pods.
- 5.12.3. Sets up and monitors gun room security and explosive licenses, if required.
- 5.12.4. Performs AME and Special Purpose Recoverables Authorized to Maintenance Spares (SPRAMS) accountability and control requirements.
- 5.12.5. Supports WRM rack, adapter, pylon, launcher, and gun maintenance requirements.
- 5.12.6. Identifies, by NSN, all aircraft armament systems components requiring acceptance inspections to base supply.
- 5.12.7. Schedules and performs all inspections, TCTOs, time changes, maintenance, and repair actions for aircraft armament systems components and AME, including AME items preloaded with munitions for contingencies.
- 5.12.8. Advises the Weapons Element Supervisor of any factors limiting the maintenance capability.
- 5.12.9. Maintains WRM assets.
- 5.12.10. Files equipment historical records (AFTO Form 95s, **Significant Historical Data**) for AME, aircraft guns, and weapons systems NIE, if decentralized.
- 5.12.11. Coordinates with PS&D for equipment requiring in-shop inspections. (When possible, schedule calendar NIE inspections in conjunction with the nearest aircraft hourly inspection.)
- 5.12.12. Performs off-equipment acceptance/transfer inspections on aircraft, to include NIE and AME. These inspections include a parts integrity, a complete electrical and mechanical check to include associated cables, and updating the historical records for each item.
- 5.12.13. Performs the armament system portion of aircraft hourly/periodic inspections.
- 5.12.14. Maintains and inspects ammunition loading assemblies and systems and replenishers. The Munitions Element or AGE Element maintains the chassis portion.
- 5.12.15. Maintains task qualification for personnel supporting combat coded flying squadrons. Coordinates with the Weapons Element Supervisor, the Wing Weapons Manager, and other required areas as necessary, to establish standard minimum qualification requirements. Qualifications may include, but are not limited to; installation and removal of all assigned aircraft NIE, aircraft configuration and deconfiguration, weapons release and gun system functional checks, and troubleshooting or repair.
- 5.12.16. In coordination with PS&D, requisitions parts to satisfy time change requirements for aircraft armament or gun system components not identified in the applicable aircraft -6 T.O.
- 5.12.17. Accounts for, stores, and controls AME equipment.

5.12.18. When assigned F-2 type trailers for AME deployment, maintains trailers as required. Trailers placed in use receive pre-use and post-use serviceability inspections. Develop periodic inspection requirements (maximum interval of 18 months) for trailers in storage.

5.12.19. Lists assets as SPRAMS if required.

**5.13. Armament Support Section.** This section stores and maintains required tools and equipment, and manages supply and bench stock functions for the element. Personnel assigned to this section may be aligned with Armament System for participation in competitions and recognition programs. The Armament Support Section:

5.13.1. Performs user calibration and maintenance on element TMDE.

5.13.2. Coordinates with the Precision Measurement Equipment Laboratory (PMEL) to meet calibration requirements.

5.13.3. Maintains the equipment ID listing.

5.13.4. Manages consumables.

5.13.5. Ensures locally manufactured equipment (LME) not included in tech data, is approved for use.

**5.14. Weapons Expediter/Dispatcher.** The Weapons Expediter is responsible to the Weapons Element Supervisor for all armament systems maintenance and munitions loading operations. The Expediter responds to maintenance priorities established by the Flightline Expediter and Production Superintendent, and operates from a vehicle equipped with a portable or mobile radio. Expediter:

5.14.1. Supervises and monitors on-equipment armament systems maintenance and munitions loading operations.

5.14.2. Tracks aircraft and suspension equipment and munitions configurations.

5.14.3. Informs the Flightline Expediter of all start and stop times, status changes, delays, and extensions.

5.14.4. Performs as many supervisory postloads and maintenance inspections as possible.

5.14.5. Coordinates with Munitions Control for delivery and pickup of munitions items.

5.14.6. Ensures accomplishment of all scheduled and unscheduled maintenance and inspections, with the Flightline Expediter.

5.14.7. Monitors the safety of flightline munitions operations.

5.14.8. Tracks munitions expenditures on AF Form 2434 **Munitions Configuration and Expenditure Document** or locally devised form, for all aircraft configured and loaded to release or fire munitions.

Record location or position of all munitions related AME or munitions SE by serial number. An AF Form 2434, is not required for aircraft loaded for alert or exercises not involving flight. At the end of the flying day, sends copies of the AF Form 2434 to the function maintaining the applicable item and expenditure records.

**5.15. Sortie Support Flight.** This flight normally consists of Inspection and Support Elements. The flight is responsible for all facets of aircraft phase, periodic, or isochronal inspections, and ensuring that sufficient support equipment is available to support the production effort.

**5.16. Inspection Element.** Each AGS has a dedicated dock. The Inspection Element performs major and minor isochronal, phase, or periodic inspections. Units determine if the Inspection Element also performs preflights, basic postflights, hourly postflight, thruflights, TCTOs, home station checks, refurbs, and special inspections. Inspections normally consist of preinspection, look, fix, and postinspection phases. Develop inspections according to T.O. 00-20-1. Applicable -6 series T.O.s list required inspection items. T.O. 00-20-5, *Preventive Maintenance Program*, identifies the different types of inspections. Rescue units may identify inspection personnel by letter and form teams as inspections become due. The Inspection Element Supervisor may appoint dock supervisors and coordinators; reviews inspection schedules; and ensures dock teams are available to meet inspection needs. Specialists are not assigned to this element; however, they are controlled by the Inspection Element when they are performing maintenance in the docks. When specialist support is required, the Inspection Element



coordinates with MOC and/or production superintendent. The Inspection Element develops a standardized inspection flow plan to aid in managing the progress of the inspection, and to control dock personnel and support specialists. Units may use on-line ADS instead of the inspection flow plan to request specialist support. The dock supervisor will develop procedures in conjunction with PS&D to ensure data remains current with -6 T.O. requirements. All discrepancies discovered during the inspection will be documented. Standard approved discrepancy sheets may be used to identify discrepancies during the inspection. Open discrepancies will be transferred to applicable AFTO Form 781s prior to postdock. The aircraft is prepared for a Functional Check Flight, if required.

**5.17. Support Element (when assigned).** The support element maintains CTK and equipment storage. Controls and maintains TMDE and applicable -21 equipment (when assigned).

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## Chapter 6

### MAINTENANCE SQUADRON (MXS)

**6.1. General.** The Maintenance Squadron (MXS) provides support to the AGSs sortie production and the depth to sustain maintenance effectiveness. The MXS is divided into two flights, the Component Repair Flight and the Equipment Maintenance Flight. The extent of CUT tasking will be locally determined. MDS peculiarities will determine exceptions to the general organization of the MXS.

#### **6.2. Specialist Dispatch.**

6.2.1. Element/Work Center supervisors ensure:

6.2.1.1. Coordination with the MOC on maintenance priorities before dispatching personnel.

6.2.1.2. Specialist availability is provided to the MOC at the beginning of each shift and as changes occur for those specialists routinely dispatched.

6.2.2. Once dispatched, specialist responsibilities to the expeditor, production supervisor, or dock supervisor include:

6.2.2.1. Reporting in before beginning the job.

6.2.2.2. Verifying the status of the aircraft or equipment.

6.2.2.3. Reporting job completions, stop times, work slippage's, and significant problems.

6.2.2.4. Providing all document numbers for back-ordered parts.

6.2.2.5. Ensuring ADS is completed and accurate in a timely manner.

**6.3. Component Repair Flight (CRF).** The CRF performs both on- and off-equipment maintenance on assigned aircraft and normally consists of the Avionics Element, the Propulsion Element, and the Accessory Element.

**6.4. Avionics Element (AE).** The Avionics Element maintains avionics systems, related equipment, and components. It may consist of the Mission Systems Shop, Communications/Navigation Shop, Instrument/Flight Control/Guidance Control Shop, Avionics Intermediate Shop/Intermediate Automatic Test Station, Electronics Warfare, and Type IV Precision Measurement Equipment Laboratory.

6.4.1. This element develops: maintenance procedures, in conjunction with Operations Group (OG), to accomplish programming of Electronic Warfare Systems to include Mark XII/Mode 4 and IFF systems.

6.4.2. The element supervisor will ensure crypto components are controlled and maintained according to National Security Agency and Air Force Intelligence Command directives.

6.4.3. Two-level maintenance restricts the level of repair authorized for avionics Line Replaceable Units (LRUs). The following guidelines apply to organizations operating under two-level maintenance.

Avionics elements are authorized to perform the following maintenance actions if the required support equipment/tech data is authorized and on-hand. Repairs above and beyond those listed require approval from the appropriate approval authority (i.e. MAJCOM, depot, etc.). Authorized repairs are Could Not Duplicate, Bench/Functional Check, Wing-Level TCTOs, Line Replaceable Unit (LRU) Operations Flight Program (OFP) loads, cross cannibalization of SRUs, replacement of minor bits and pieces, and approved REP repairs.

6.4.4. Mission Systems Shop performs on- and off-equipment maintenance of aircraft communication, Intermediate Automated Test Station (IATS), interphone and aircraft public address systems, airborne radio anti-jam systems, communications antenna systems, secure voice systems, cryptographic encoders, radar altimeters, TACAN, IFF, navigational Forward Looking Radar (FLR), search radar, rendezvous radar, Instrument Landing System (ILS), station-keeping radar, traffic control radar beacons, Traffic Collision Avoidance System (TCAS), Ground Collision Avoidance System (GCAS), Global Positioning System (GPS), navigation systems, Stability Augmentation System (SAS), flight management system, AIMS, Fuel Savings Advisory System (FSAS), aircraft all weather landing systems, attitude heading reference system, Automatic Flight Control Systems (AFCS), instrument systems, attitude reference and bombing systems, auxiliary flight reference systems, compass systems, pressure altimeters, engine test cell instrumentation, Inertial Navigation System (INS), Self Contained Navigation System (SCNS), airborne electronics sensors and electro-optical sensors and their components, and test equipment that is not maintained by the PMEL.

6.4.4.1. This shop interfaces with squadron sensor photographic processing personnel and photographic intelligence interpreters to identify and correct the problem areas.

6.4.5. Communications/Navigation Shop performs on- and off-equipment maintenance of aircraft communication, interphone and aircraft public address systems, airborne radio anti-jam systems, communications antenna systems, secure voice systems, cryptographic encoders, radar altimeters, TACAN, IFF, navigational Forward Looking Radar (FLR), search radar, rendezvous radar, Instrument Landing System (ILS), station-keeping radar, traffic control radar beacons, traffic collision avoidance system, ground collision avoidance system, global positioning system, navigation systems, Self Contained Navigation System (SCNS) and their components, and test equipment that is not maintained by PMEL.

6.4.6. Avionics Guidance and Control Shop performs on- and off-equipment maintenance on aircraft Stability Augmentation System (SAS), flight management system, AIMS, Fuel Savings Advisory System, all weather landing systems, attitude heading reference system, Automatic Flight Control Systems (AFCS), attitude reference and bombing systems, auxiliary flight reference systems, compass systems, pressure altimeters, engine test cell instrumentation, Inertial Navigation System (INS), and associated components. This shop inspects, repairs and calibrates test equipment, performs inspection, calibration and repair of torque wrenches and tensiometers when not performed or maintained by PMEL. Performs inspection, calibration and repair of torque wrenches when approved by AFMETCAL Det 1.

6.4.7. Video Shop: performs on- and off-equipment maintenance on airborne video equipment such as video cameras, motion picture projectors, slide film projectors, video monitors, processing and distribution amplifiers, video audio switchers, synchronizing generators, and control circuitry. At LG option, this shop may be assigned to the Aircraft Generation Squadron.

6.4.8. Sensor/CVTS/AVTR performs on- and off-equipment maintenance on sensors, cockpit video system, and airborne video tape recording system. This function may be assigned to Avionics Element or AGS depending on MDS.

6.4.9. Avionics Intermediate Shop (AIS)/Intermediate Automated Test Station (IATS) performs off-equipment maintenance including inspecting, troubleshooting, repairing and alignment of Line Replaceable Units (LRU). They also repair, align, calibrate and certify major test stations and their related equipment, and test equipment not maintained by Type II PMEL. Performs inspection, calibration and repair of torque wrenches, when approved by AFMETCAL Det 1.

6.4.10. Electronic Warfare (EW) Shop performs on- and/or off-equipment maintenance, depending on MDS, on Radar Warning Receivers (RWR), chaff/flare dispensers, Electronic Countermeasure (ECM) systems. These EW systems may be either internally or pod mounted in or on the aircraft. EW personnel ensure all classified EW systems and TMDE are properly stored, transported, and controlled. If the EW workload is sufficiently small, the LG may assign this workload and associated manpower to another section/shop.

**6.5. Propulsion Element.** This element maintains propulsion systems, components, and related support equipment, depending upon the assigned weapons system. The extent of CUT tasking will be locally determined. In addition to the responsibilities outlined in Chapter 2, the propulsion element supervisor will:

6.5.1. Coordinate with the Base Engine Manager.

6.5.2. When tasked, is the primary OAP manager and coordinates with the OAP Lab, MOC, QA, and AGS to ensure action is taken on abnormal OAP trend data. Local procedures will be established specifying criteria and required actions.

6.5.3. Ensure a sufficient number of personnel are engine-run qualified. Each individual designated as engine-run qualified is task certified on the SCR. Certification is documented in ADS by aircraft MDS/engine series with maximum power settings specified, when applicable.

6.5.4. Review in-flight shutdowns, premature engine/propeller removals, and test cell rejects of all engines/propellers.

6.5.5. Manage the engine conditioning, monitoring programs, and diagnostic system, if applicable.

6.5.6. Establish requirements for engine runs prior to in-shop maintenance. This option does not override the specific requirements contained in weapon system/engine technical orders.

6.5.7. Ensure that inspections, repairs, and corrosion control is accomplished, and records are maintained on noise suppresser systems, test cells, and trim pads, when required.

6.5.8. Designate qualified personnel as bearing inspectors, and ensures individuals are trained and certified to use borescopes.

6.5.9. Ensure all engine, propellers, modules, and parts are ready for shipment.

6.5.10. Quick Engine Change (QEC) Kit Management. QEC kits are managed by the Propulsion Supervisor and/or the Base Engine Manager. The shop processes and controls QEC kit repair cycle parts requiring repair and ensures kits are removed from engines during tear down.

6.5.11. Ensures auxiliary power units (APU) are tested, maintained and monitored IAW appropriate guidance, when assigned.

**6.6. Jet/turboprop/turboshaft Engine Intermediate Maintenance (JEIM) Section.** The JEIM section stores, builds-up, tears down, modifies, and repairs engines, QEC kits and tests components. The section may be organized using the dock or crew concept. Engines under Two Level maintenance will normally do retained tasks only. In addition to the responsibilities outlined in Chapter 2 the section chief will:

6.6.1. Plan and monitor the progress of propulsion system maintenance to ensure maintenance schedules are met. Anticipate delays and material requirements to prevent schedule disruption.

6.6.2. Prepare Engines and Components for shipment and ensures units being returned to depot are properly identified. Attaches CAMS/CEMS products to life-limited tracked components IAW 00-20 series T.O.s and ensure AGETS/ETTAS rejected components are shipped with AGETS/ETTAS printouts and deficiency reports.

6.6.3. Ensure a work package is established for each engine in periodic inspection, reconditioning, or other maintenance. The most recent JEIM work package established will be maintained until the engine is permanently transferred where upon the work package will transfer with the engine. Gaining units will maintain the work package until the engine is shipped back to the depot for full ENSIP or overhaul inspection. Engine Regional Repair Centers (ERRC) will maintain engine work packages for engines under their control. Gaining activity may request copies of work packages. This package contains a list of all parts, TCTOs and Time Change Requirements for the engine. One workorder is initiated in CAMS for the entire job. Separate JCN are initiated for discrepancies found during the look phase of an inspection or subsequent T.O. repair. Complete workorders in CAMS during inspection reconditioning or maintenance. Work folders contain work sheets documenting engine historical information, critical maintenance management stages and employee numbers of technicians/supervisors completing maintenance/inspections. Work folders/sheets are supplemented to fit unit needs. Flights with small computer capabilities may use computer-generated products provided they include all required information. Work packages, as a minimum, contain the following:

6.6.3.1. Engine Information Worksheet. As a minimum, this form shows engine serial number, type, position (if applicable), engine operating time, date started work, date turned serviceable, job control number, maintenance -required, reason for removal, list of time change/TCTO requirements and work accomplished. The supervisor reviews signature blocks (Crew Chief, Support. Engine Management Section), and Section Chief verifies all repair requirements have been accomplished and documented in the work folder. Ensure the job control number created by the flightline is used to process repair of the engine and any additional workcenter events (WCE). WCES and CAMS profile packages are scheduled against the flightline generated WCE. This procedure will ensure all maintenance data is documented against one job control number and engine failure information is connected to the in-shop action.

6.6.3.2. Receiving Inspection Worksheet. This sheet contains a list of items to be accomplished by JEIM prior to engine repair. Minimum requirements are: FOD check of engine inlet and exhaust, inspection of engine for general condition and fluid leakage, EHR/TEMS data (if applicable), engine trending diagnostic (ET&D) (if applicable), borescope (if applicable), a check with OAP lab for possible problems, and a list of unique or problem areas to be checked prior to engine disassembly or maintenance.

6.6.3.3. Serial Number Tracked/Accessory Component Replacement Record. This shows a list of components replaced by nomenclature, old and new part number (if applicable), serial number and total operating time of old and new components.

6.6.3.4. Daily Summary Record. This record provides synopsis of maintenance performed during each shift.

6.6.3.5. Propulsion Flight In-process Inspection (IPI) List.

6.6.3.6. Parts Requisitions Record. This lists all parts (including time changes) on order. It has columns for stock numbers, nomenclature part number, document number, quantity and status.

6.6.3.7. Test Cell Preparation Worksheet. This worksheet contains a list of items to be accomplished by JEIM prior to sending an engine to the test cell. As a minimum, document the following: an inlet and exhaust FOD inspection, any pre-run servicing required, and capped open lines, cannon plugs, engine intake and exhaust. Also, document a thorough tool inventory and an inspection for loose hardware. The section supervisor will document a review of the work folder to ensure that maintenance performed or required actions are documented.

6.6.3.8. Test Cell Pre-run Worksheet. Accomplished by test cell personnel prior to an engine run. It includes an inspection of the inlet, exhaust and external engine for FOD; a check of the engine for general condition; a Foreign Object Inspection of the test stand, thrust bed and, test cell equipment; a tool box inventory prior to engine run; engine servicing check; ensuring all prior to engine run checks and installation requirements are completed; availability and serviceability of fire extinguishing equipment; and a statement that personnel have been briefed on engine run emergency procedures prior to the run.

6.6.3.9. Test Cell Post Run Worksheet. This sheet lists items that are accomplished and documented by test cell personnel after engine run. It includes: intake and exhaust inspection; OAP sampling (obtain results prior to engine removal from test stand if possible); engine test cell discrepancies, amount of fluid serviced, tool box inventory after engine has been removed from test cell, date and type of engine preservation; 7-level inspection of components replaced or disconnected at test cell, attachment of an AFTO Form 350 to lines, fittings or plugs requiring leak check when the engine is installed in an aircraft (**NOTE:** Items not accessible in aircraft are leak-checked prior to leaving test cell), securing engine throttle to "Off" position, capping, plugging, and covering, fittings, lines, intake and exhaust, synopsis of maintenance actions performed by test cell on the daily summary work sheet; and preparing engine test cell run sheet.

6.6.3.10. Final Inspection Worksheet. Lists items accomplished by JEIM personnel after repair and/or testing has been completed, it includes: FOD inspection of intake, exhaust, and external engine; borescope engine (if applicable); ensuring throttle is secured to "Off" position; capping, plugging and covering fittings and lines; attaching AFTO Form 350 to lines fittings or plugs that require "leak check" when installed in aircraft (items not accessible in aircraft must be leak checked on test cell); attaching AFTO Form 350 and/or serviceable tag to engine, ensure supply accounts and CAS has been cleared.

6.6.3.11. Ensure borescope inspection worksheets are used for all engines requiring borescope documentation.

**6.7. Accessory Maintenance Element.** This activity performs on-and-off equipment maintenance of aircraft systems and associated support equipment. The element may be organized into the following shops: Pneudraulics, Electro-Environmental, Fuel Systems, Egress, and Repair and Reclamation. The extent of CUT tasking will be determined locally.

6.7.1. Electro-Environmental. The shop performs on- and off-equipment maintenance of aircraft electrical and environmental systems and off-equipment support of flightline support equipment electrical components. Lead acid battery maintenance or particular lead acid battery tasks and maintenance of oxygen/nitrogen carts will be locally determined.

6.7.2. Egress. Maintains egress systems, components, and trainers. Provides storage of egress explosive items removed during maintenance. The shop will request Explosive Ordnance Disposal EOD assistance when egress explosive devices are damaged or suspected of being unsafe. The shop chief will adhere to the guidelines of AFI 21-112, *Aircraft Egress and Escape Systems*, with regard to procedures for training, egress maintenance augmentees, and accuracy of egress time change data.

6.7.3. Pneudraulics. Maintains aircraft hydraulic systems and high pressure pneumatic systems (except environmental and egress systems) and provide assistance required for support equipment. This shop performs local manufacturing and testing of flexible hose assemblies and testing of tubing assemblies. When required, establishes an aerial refueling receptacle, boom, or drogue system maintenance capability to maintain peculiar electrical, hydraulic, and mechanical components.

6.7.4. Fuel Systems. Maintains, repairs, functionally checks, and inspects aircraft fuel, water injection systems, hydraulic, and in-flight refueling systems and components except engine installed components. Additional supervisor responsibilities are:

6.7.4.1. Sets up controls to prevent unauthorized entry into fuel and hydrazine repair areas when required.

6.7.4.2. Ensures assigned personnel receive periodic physical examinations as established by the base medical service.

6.7.4.3. Establishes the capability for build-up and repair for all unit aircraft external/conformal fuel tanks as required.

6.7.4.4. Provides safety training for the hydrazine and fuel cell repair specialists and other personnel.

6.7.4.5. Ensures compliance with the confined space entry program.

6.7.5. Repair and Reclamation (R&R), at local option, the LG may reassign responsibilities to other shops. Performs specialized maintenance on aircraft systems, parts, and airframe to include such items as flight controls, landing gear, doors, canopies, and associated equipment requiring structural or component maintenance beyond the capability of other activities. Generally, the R&R supervisor will:

6.7.5.1. Establish a crash recovery and reclamation capability. IAW AFMAN 32-4004, *Emergency Response Operations*, Attachment 3.

6.7.5.2. Ensure the capability to perform maintenance on aircraft wheels and tires, and tow target systems, when assigned.

6.7.5.3. Accomplish and document inspections of crash recovery equipment IAW applicable directives, or at least semiannually if no directive is available.

**6.8. Equipment Maintenance Flight (EMF).** The EMF performs both on- and off-equipment maintenance on assigned aircraft and normally consists of the Fabrication Element, the AGE Element, and the Munitions Element (when assigned). (When the Munitions element is assigned, it is highly recommended the EMF Superintendent attend AFCOMAC). The extent of CUT tasking will be locally determined.

**6.9. Fabrication Element.** This activity is responsible for modification, corrosion control, local manufacture, inspection, and repair of aircraft and SE beyond the owning work centers capabilities. The element is organized into the following functions: Aircraft Metals Technology, Aircraft Structural Maintenance, Survival Equipment, and Nondestructive Testing (NDT).

6.9.1. Aircraft Metals Technology. Responsible for inspection, repair, fabrication of aircraft equipment, parts, and tools. Removes fasteners (i.e. bolts, screws and studs) beyond the capability of other aircraft maintenance functions.

6.9.2. Aircraft Structural Maintenance. Responsible for modification, manufacture, corrosion control, inspection, and repair of sheet metal, fiberglass, composite, and plastic components and related hardware for aircraft and SE beyond the user's capability. May manage the aircraft wash rack and the corrosion control facilities, when assigned.

6.9.3. Survival Equipment. This function is located in Operations on the Full Time manning document and located in Logistics on the Military manning document. Regardless of location, the responsibilities remain the same and are subject to QA technical assistance and evaluations. Responsible for the inspection, repair, and repacking of personnel parachutes, special operation type parachutes, life rafts, life preservers, anti-exposure suits, toxicological suits, slides, thermal radiation barriers, and 463L cargo nets (when applicable). Also responsible for inspection, cleaning, and testing aircraft and aircraft maintenance safety belts and harnesses, repair or fabrication of sound proofing materials, repair of organizational equipment and textile items.

6.9.4. Nondestructive Testing (NDT). Using nondestructive testing techniques determines the structural integrity of aircraft, engines, specified components, and support equipment. Findings of inspection are limited to a description of the size, location, and type of any defect discovered. Serviceability determination is not to be made by NDT personnel, except for "inspection only" TCTOs, and when NDT action constitutes a complete maintenance action. The supervisor:

6.9.4.1. Coordinates with bio-environmental health services for providing film badge services and radiographic monitoring.

6.9.4.2. Sets up procedures for precious metal recovery.

6.9.4.3. Operates and maintains the Oil Analysis Program (OAP), when assigned.

**6.10. Aerospace Ground Equipment (AGE) Element.** Has the overall responsibility for pickup, delivery, troubleshooting, maintenance, modification, inspection, and service of AGE and assigned shop equipment. The AGE element is comprised of powered and nonpowered functions. The LG has the option to relieve the AGE element from pickup and delivery of powered and nonpowered AGE.

6.10.1. In addition to the responsibilities outlined in Chapter 2, the AGE supervisor:

- 6.10.1.1. Coordinates with Production Superintendent and the MOC to establish critical level of AGE by type and quantity, and status reporting requirements when AGE falls below established critical level.
- 6.10.1.2. Coordinates with Training Management on the AGE operator training program. This program is the responsibility of the AGE Element. AGE personnel, qualified instructors may accomplish the training, or personnel designated by the AGE supervisor.
- 6.10.1.3. Sets up and manages a dispatch sub-pool of AGE, as required.
- 6.10.1.4. Maintains the gas turbine engine installed on deicer trucks, when required.
- 6.10.1.5. Ensures fuel accountability procedures are accomplished, if applicable.
- 6.10.1.6. Manages AGE tow vehicles and controls their operations.
- 6.10.1.7. Coordinates and reports equipment movement and status changes of AGE to the MOC and the flightline expediter as required.
- 6.10.1.8. Performs maintenance on other equipment directed by MAJCOM or local policy. Production, scheduling, and documentation may be assigned to the AGE element. AGE personnel will accomplish production scheduling when a scheduler is not assigned. When assigned to the AGE element, the AGE scheduling and documentation function:
  - 6.10.1.8.1. Plans and schedules TCTO actions.
  - 6.10.1.8.2. Plans, controls, and prioritizes all unscheduled and scheduled maintenance sent to the repair section, based on the critical AGE listing.
  - 6.10.1.8.3. Monitors progress of AGE maintenance.
  - 6.10.1.8.4. Controls and monitors the Awaiting Maintenance (AWM) and Awaiting Parts (AWP) file for AGE.
  - 6.10.1.8.5. Maintains the master equipment identification number listing.
- 6.10.2. Perform AGE turbine maintenance, troubleshooting, and inspections. Maintenance on AGE turbine engines that cannot be accomplished by the AGE element may be done by the Propulsion Element.
- 6.10.3. Nonpowered Aerospace Ground Equipment (LG may assign the responsibilities to other work centers). Performs scheduled inspections and maintenance on common nonpowered AGE. Nonpowered AGE used mainly in a shop environment and not normally dispatched will be maintained by the owning work center. The element supervisor can designate a master list of equipment. Nonpowered AGE also accomplishes repairs and scheduled inspections on the Liquid Oxygen (LOX), Gaseous Oxygen (GOX), and nitrogen trailers, if required.

**6.11. Munitions Element.** Responsible for the control, accountability, storage, shipping and receiving, inspection, maintenance, assembly and delivery of conventional and precision guided munitions. The element manages and maintains all assigned tools, test, and munitions handling equipment. The element also administers, operates, and maintains the Combat Ammunition System-Base (CAS-B), Deployable (CAS-D), and Tactical Missile Record System (TMRS) ADS. If a MASO Representative is assigned by the MASO, they must be appointed in writing and the letter will identify duties and responsibilities in the appointment letter. The Munitions Element is composed of three functions: Production, Material, and Systems.

- 6.11.1. Production. Assembles, maintains and delivers conventional munitions, precision guided munitions, associated containers, training items, and support equipment.
- 6.11.2. Material. Stores, handles, inspects, ships, receives, accounts for, and delivers munitions, containers, dispensers, and training items.
- 6.11.3. Systems. Plans, schedules, controls, and directs all munitions activities. Administers the CAS-B/D systems, manages deployment, and training programs.

**6.12. Munitions Element Supervisor.** Responsible to the EMF Chief for the overall management of the element and their respective sections. General responsibilities are listed in AFI 21-201, *Management and Maintenance of Non-Nuclear Munitions*; and in paragraph 2.10 of this instruction. It is a mandatory requirement for each 2W000 CMS or Senior Munitions Element Supervisor to attend Air Force Combat Munitions Center (AFCOMAC) within two (2) years of assignment. The Element Supervisor will:

6.12.1. Review plans and documents (i.e. War Consumable Distribution Objective (WCDO), Operational Plans (OPlans), Tactical Air Munitions Program (TAMP), Designed Operational Capability (DOC) statement, Time Phased Force Deployment List (TPFDL), Explosive Site Plans, guard integration) to ensure they are incorporated/ deconflicted, to the munition portion of the Base Support Plan (BSP).

6.12.2. Ensure supervisors enforce the requirements in AFMAN 91-201, *Explosives Safety Standards*. Ensures conflicts between operational/procedures and AFMAN 91-201 are brought to the attention of ANG/SEW for resolution.

6.12.3. Inform squadron supervision/LG and ANG/LGMW when the capability to accomplish the munitions mission becomes adversely affected. Deployment/contingency requirements, equipment, and 2W0X1 shortfalls will be reported in Status of Resources & Training Systems (SORTS).

6.12.4. Coordinate with the Wing Weapons Manager, Weapons Element Supervisor, and Weapons and Tactics Officer on the Unit Committed Munitions Listing (UCML) annually. Using the UCML, develop the Standard Configured Load (SCL).

6.12.5. In coordination with the Weapons Element Supervisor, establish procedures for the accountability, control, and flight hour documentation of munitions loaded in or on aircraft. As a minimum it prescribes:

6.12.5.1. AF Form 2434, or local reproduction standardized with required information.

6.12.5.2. Inventory and daily reconciliation procedures.

6.12.5.3. Responsibilities of the Munitions Element, Weapons Element, account custodians.

6.12.5.4. Procedures for accountability and control of munitions loaded in/on aircraft.

6.12.6. Submitting the element War Reserve Material (WRM) PEC 28030 budget input to the unit War Reserve Material Office (WRMO) and a copy to ANG/LGMW and wing XPL.

6.12.7. Managing the unit munitions WCDO. Upon receipt the MASO, DO and XPL will review the document for accuracy and report any discrepancies to HQ ACC/LGW/LGX and with an info copy to ANG/LGMW.

6.12.8. Units must plan to store a reasonable mixture of training, WCDO, and other required munitions. Units must up channel any factors that limit their capability to receive, inspect, and store their WCDO requirements to ANG/LGMW.

6.12.9. Ensuring copies of all applicable explosives site plans are maintained in the element. Reviews annually to ensure any changes are reflected in the documentation. Planned changes to physical facilities usage or footprint are coordinated with Wing Safety, Resource Protection, and Civil Engineering prior to implementation.

6.12.10. Establishing and maintaining a hazardous waste program according to *Local Environmental Requirements, Resource Conservation and Recovery Act*, and *40 CFR Part 266*. Enforce procedures IAW AFOSH and base programs to control recoverable material disposal.

6.12.11. Establishing local procedures governing all munitions operations (to include CAS-B) during severe weather or electrical storms according to AFMAN 91-201.

6.12.12. Ensuring excess munitions are reported to ANG/LGMW for guidance/disposition.

6.12.13. Ensuring munitions shelf and service life are monitored so disposition actions are initiated on items that cannot be used prior to expiration (24 months in advance) of the service/shelf life.

6.12.14. Ensuring TMRS is used IAW T.O. 21M-1-101, *Reliability Asset Monitoring System*. Appoint a TMRS monitor and alternate, provide a copy to the MASO and WR-ALC/LKG as changes occur. TMRS database must contain all assigned missile components IAW T.O. 21M-1-101 and mirror CAS-B's accountable records.

6.12.15. Ensuring Munitions Control (if manned)/Fire Dept is informed of fire symbol, hazard marker changes, and CIC changes.



- 6.12.16. Will review AFI 21-201 for responsibilities between sections annually and document compliance.
- 6.12.17. Ensure applicable site plans & maps are maintained within the flight and reviewed annually IAW AFI 21-201.
- 6.12.18. Ensure Dual signatures are accomplished for munitions facilities/structures with CIIC (Control Inventory Item Code) of one and two.

**6.13. Work Center Supervisor.** Responsible to the Element Supervisor for managing, supervising, and training assigned personnel. Evaluates assigned personnel and determines training needs. Tracks training requirements and ensures personnel attend, or are scheduled to attend, required training. Ensures training documentation is accurate. General responsibilities are listed in AFI 21-201, AFI 21-202 and those listed in paragraph 2.10 of this ANGI. Workcenter supervisor will incorporate Section Superintendent and Element Supervisor responsibilities IAW AFI 21-201.

6.13.1. Provides Munitions Assembly Conveyor (MAC) training for all personnel upon assignment to munition duties in support of wartime contingency tasking. Units without a wartime contingency tasking, submit a waiver to ANG/LGMW IAW AFI 21-201. Provides classroom training before participation in practical training. Personnel accomplish MAC training every 12 months. Participation in a MAC operation during a local exercise fulfills this requirement. The element supervisor establishes the number of personnel to be trained on each tasked munition in order to meet the unit's most demanding wartime or contingency requirement. In determining this, the element supervisor considers the highest probable usage of each tasked munition, the complexity of the task, and the need for flexibility in use of personnel.

6.13.2. Ensures maintenance of lightning protection systems. Visual inspections are performed on lightning protection and static ground systems IAW AFMAN 91-201, AFI 32-1065, *Grounding Systems*.

6.13.3. Ensures that the element Master Training Plan (MTP) covers peacetime and contingency tasks. Ensures all munitions personnel are trained and qualified to support unit wartime and contingency missions. UCML, the preintegrated tasking order, operational support, and BSP (if available) will be used to determine scope of the training program.

6.13.4. Ensures that a munitions production-training program is established for munitions listed on the UCML. The training program consists of 2 phases: Classroom instruction and practical (hands-on) training. Training will consist of an approved lesson plan for classroom instruction.

6.13.4.1. Instruct all personnel in the tasks required accomplishing unit BSP during transition to conflict and general war.

6.13.4.2. Include safety devices or features according to AFMAN 91-201 and end item T.O.s.

6.13.4.3. Include special hazards according to tech data.

6.13.4.4. Identify components according to end item T.O. Inspection of components according to T.O. 11A-1-63, *Rapid Assembly Munitions*, or the specific item T.O. (-63 is preferred). Rapid assembly of components according to T.O. 11A-1-63. The practical phase must emphasize setup for mass production, (MAC, Dunnage, or Trailer) use of power tools, and on-the-spot maintenance procedures (such as use of thread chasers, etc.). This phase will consist of physical inspection and assembly of components according to T.O. 11A-1-63.

6.13.5. Will review AFI 21-201 for responsibilities between sections annually and document compliance.

**6.14. General Requirements.**

6.14.1. Stores munitions according to item technical manuals, AFMAN 91-201, AFI 31-209, and T.O. 11A-1-61-1, *Truck Loading (Drawings) Munitions*, series. US Army Defense Ammunition Center (USADAC) drawings are available through the World Wide Web (<http://192.108.244.100/de/det/dapam/toc.html>) or contact US Army Defense Ammunition Center DSN 585-8072.

6.14.2. With MASO coordination, provides each munition user with written notification of their new fiscal year munitions allocations and any changes thereafter.

6.14.3. Combat Ammunition System-Deployable (CAS-D) is the primary means to account for munitions while deployed. Units must develop and be capable of implementing backup procedures to maintain accountability in the event of system failure or power loss.

6.14.4. Flight hours will be updated weekly on all assigned missiles and submitted monthly on a database disk to WR-ALC/LKG. Ensures corrections and verifications are made to the TMRS error listing, and the corrected database resubmitted.

6.14.5. Ensures replacement missile components are requisitioned on a one-for-one basis utilizing CAS. Enter the shipping document number in the comment field of the requisition. Failure to annotate the shipping document number will result in cancellation of the requisition (ensure that characters are not used in the comment field).

6.14.6. Workorders (CAS-B). ANG units not using the CAS-B workorder program will develop local written guidance and manual procedures IAW AFI 21-201.

6.14.7. Munitions Control (M/C). M/C will use visual aids to provide access to critical data IAW AFI 21-201.

6.14.8. MASO and all required personnel with the need to know will review the Tactical Air Missile Program (TAMP) and WCDO document during the 1<sup>st</sup> quarter of the each FY and document the review. (These documents are classified).

6.14.9. Munitions Control 2000 (MC2K). This will remain an option to use.

6.14.10. MMHE & TCTO status will be tracked in one of the following programs: CASB; CAMS, OR MC2K.

6.14.11. AFI 21-201, para 2.12.26 does not apply to ANG units except MMHE will be tracked IAW 6.14.10.

**6.15. Command Missile Policy.** To maintain our War Reserve Material (WRM) missile reliability and availability, the following applies (except AGM-69/86/129):

6.15.1. Tactical AIM-120 (AMRAAM), AGM-84 (HARPOON), and containerized/not containerized AGM-142 (HAVE NAP) missiles are not used for peacetime loads, ICTs, exercises, or inspections.

6.15.2. The total number of ready missiles (Category C) for these units may be one Standard Conventional Load (SCL) per Primary Authorized Aircraft (PAA). Units with continuous active alert commitments (includes home station and detachments) may add one standard missile load for each primary alert aircraft to their total. Missiles stored at detachments are placed in dead/All-Up-Round-Container (AURC) storage (Category A).

6.15.3. Missiles may be electronically tuned during ORIs, ICTs, and local exercises.

6.15.4. All remaining WRM missiles are placed in dead/AURC storage (Category A). Maximum use of AURCs or barrier bags is encouraged to take advantage of the extended periodic inspection interval and increased readiness posture.

6.15.5. WRM components, e.g., guidance units or fins, needed to support the captive carry allocation come from those assets in dead/AURC storage (Category A).

6.15.6. The Command Missile Policy applies to all versions of Tactical Air Missiles (AIMs & AGMs).

6.15.7. Tactical missiles may be flown for OPlan tasking, air defense alert, Weapons System Evaluation Programs (WSEP), and Operational Test and Evaluation (OT&E) Programs.

6.15.8. Live and inert missile (or electronic simulators) of the same type are not commingled on an aircraft for any purpose. Live missiles of one type and inert versions of others may be loaded on an aircraft only when considered essential to unit training operations.

6.15.9. Load crew training missiles will mirror the parent tactical missile. Training missiles may be flown in authorized partial configurations.

6.15.10. Missiles will not be electronically verified during or after IG, ORI, or local exercises/ICTs on the field test set solely to determine missile reliability/serviceability.

6.15.11. A dedicated e-mail address will be established for units utilizing the TMRS program IAW applicable Technical Orders.

6.15.12. TAC Ferrying of Alert AUR missiles:

- 6.15.12.1. For ferry flights of the AIM-9. The GCS requires power to the seeker head to keep it stabilized due to the internal gyros, even if other parts of the missile are deemed to be bad.
- 6.15.12.2. For ferry flight of AIM-7. The AIM-7 umbilical adapter must be secured and shorted to prevent power to the missile.
- 6.15.12.3. Units requesting to TAC Ferry missile will contact MAJCOM ANG/LGMW with serial numbers and date of event.
- 6.15.12.4. ANG Aircraft transporting live missiles will not engage in Air-to-Air or Air-to-Ground training.

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## Chapter 7

### WEAPONS STANDARDIZATION (WS)

**7.1. General.** This chapter covers wing weapons activities. It spans a wide spectrum of weapons activities including weapons standardization, training, and evaluation. This chapter does not apply to C-130, C-141, C-5, or KC135 units unless specifically included.

**7.2. Weapons Standardization (WS).** Align WS under the LG. WS includes the Wing Weapons Manager (WWM), an NCOIC, and the Loading Standardization Crew (LSC). Academic instructors and lead crews work for WS while performing functions for the WS.

7.2.1. Wing Weapons Manager. The LG appoints a WWM, who is the most qualified 2W1XX and is the functional manager for AFSC 2W1X1. The WWM ensures weapons activities can perform required combat skills in support of O-Plan tasking. The WWM:

7.2.1.1. Works with Weapons Element supervisor to balance grades and skill levels between the weapons section and armament systems.

7.2.1.2. Designates the LSC, lead crews, Certified Combat Load Crew (CCLC), and academic instructors in writing and monitors their activities.

7.2.1.3. Develops and implements the Certified Combat Load Crew (CCLC), and Dual Load Crew Program to support the applicable wing ICT program.

7.2.1.4. Monitors overall load crew status and submits a message through the LG to ANG/LGMW when the number of certified load crews falls below the UCML established minimums. When requested by ANG/LGMW the WWM will submit the monthly Weapons 9405 Unit status report.

7.2.1.5. Coordinates with the AGS Weapons Element supervisor, Munitions Storage Area supervisor and the Weapons and Tactics Officer on the Unit Committed Munitions Listing (UCML) on at least an annual basis. They as a collective group will develop the units Standard Configured Load (SCL), utilizing the UCML as the basis of information.

7.2.1.6. Serves as an advisor to the Wing Exercise Evaluation Team. Provides expertise in development of local exercises involving weapons functions to include munitions loading.

7.2.1.7. Develops a wing instruction for launch and recovery of explosives loaded aircraft, in coordination with the Safety Office and airfield management. Immediately prior to launch, arming, and recovery safing procedures may be performed in the aircraft parking area at the discretion of the LG.

7.2.1.8. Ensures availability of sufficient serviceable load training munitions to support both load crew and ICT training programs.

7.2.1.9. Designates, in coordination with the LG, the number of load crews certified on conventional support/limited use munitions based on unit tasking.

7.2.1.10. Monitors the unit's weapons release reliability and gun fire-out rates to determine weapons system effectiveness.

7.2.1.11. Determines the number of certifying officials required to be present during load crew evaluations, training loads, and proficiency loads.

- 7.2.1.12. Appoints supply point custodian for training munitions.
- 7.2.1.13. Evaluates and certifies the LSC. The Weapons Manager may designate an individual to fill this function.
- 7.2.1.14. Acts as the unit point of contact to ANG/LGMW for weapons related problems. Identifies and requests in writing all required off-base assistance.

**7.3. Weapons Standardization NCOIC.** The NCOIC develops and oversees the weapons standardization program. The WS NCOIC:

- 7.3.1. Coordinates with the Weapons Element to schedule personnel for training and evaluations.
- 7.3.2. Coordinates with the maintenance support squadron PS&D for training aircraft.
- 7.3.3. Manages training munitions, components, and accessories.
- 7.3.4. Establishes a custody account with the munitions operations unit (FV) for conventional training munitions. Air launched missiles may be excluded.
- 7.3.5. Forecasts annually for training munitions identifying total requirements, regardless of items on hand.
- 7.3.6. Orders training munitions and items to meet load crew training needs, and ensures training munitions mirror correct body color and mechanical function of live munitions.
- 7.3.7. Assigns training munitions used for load crew training and ICT/DLO training.
- 7.3.8. Maintains a system to depict load crew status. As a minimum, the load crew status system reflects:
  - 7.3.8.1. The formed crews by number and crew member position, by individual.
  - 7.3.8.2. The next MPRL due date for each munition (Not applicable for units with ICT program)
  - 7.3.8.3. Quarterly evaluation due date.
  - 7.3.8.4. Preload due date. (B-1 only)
  - 7.3.8.5. ICT/DLO due date.
  - 7.3.8.6. Competent Familiarity Loading (CFL) due date for each type of support munitions.
  - 7.3.8.7. Training due date for each weapons task qualification.
- 7.3.9. On notification of a deployment or an increased state of alert, ensures load crews are certified on support munitions, as required.
- 7.3.10. Maintains a copy of all loading technical data for assigned aircraft. Training and test units need only maintain checklists for munitions listed on their UCML and those undergoing test and evaluation.
- 7.3.11. Develops time standards for integrated loads.
- 7.3.12. Ensures qualification of all load crews to load/unload gun systems and preloaded chaff or flare magazines in defensive countermeasures systems on assigned aircraft.
- 7.3.13. Ensures load crews demonstrate proficiency on all type aircraft racks, launchers, and stations prior to certification. For conventional munitions capable of multiple carriage, this requires both parent station and MER/TER/BRU/CBM/CRL loading.
- 7.3.14. Ensures load crew certification records/automated products are sent with load crews to TDY locations, if loading tasks are to be performed.
- 7.3.15. Sets standards, develops local policies and procedures, and interprets all technical data, and directives governing the weapons standardization program.

**7.4. Loading Standardization Crew (LSC).** The LSC works for WS NCOIC and conducts the Weapons Standardization and Evaluation Program. The Wing Weapons Manager/WS NCOIC evaluates and certifies the LSC according to criteria in this section. The LSC chief must be at least a 7 level technician in AFSC 2W1X1. The LSC trains, evaluates, and certifies the lead crews, and load crews, in safe and reliable munitions loading procedures. Multiple MDS Composite Wings will have an LSC for each MDS. The LSC:

- 7.4.1. Conducts and monitors training to ensure personnel maintain a high degree of proficiency in loading unit-committed munitions.
- 7.4.2. Monitors certification and recurring training documents to ensure all load crew members complete required proficiency training. Takes decertification action if recurring requirements are not met.

7.4.3. Documents load crew training IAW paragraph 7.11 below. When applicable initiates AF Form 2435, **Load Training and Certification Document**.

7.4.4. Approve/disapprove AFTO Form 22s that pertain to loading technical data.

7.4.5. Develops and coordinates weekly/monthly load crew training schedules and provides them to PS&D.

7.4.6. Monitors lead crews in the performance of their duties.

7.4.7. Performs quarterly evaluations on certified load crews.

7.4.8. Provides nonload crew personnel initial and recurring weapons task qualification training, including practical training on the proper use, installation, and removal of weapons system safety devices; munitions safety requirements; location of weapons system explosive items used to jettison and release external stores; stray voltage checks; and cockpit armament system switches.

7.4.9. Lead Crews. They assist the LSC in training, evaluating, and certifying unit load crews. The lead crews:

7.4.9.1. Initiate AF Form 2435s on certified crew members, when applicable.

7.4.9.2. Review certification and recurring training documents to ensure all load crew members complete required proficiency training. Take decertification action when recurring requirements are not met.

7.4.10. Academic Instructor. The academic instructor is assigned to WS and administers/monitors the weapons academic training program. The instructor conducts required initial and recurring weapons academic training for all unit load crew members, loading supervisors, ICT team members, and other personnel who maintain specific weapons task qualifications. The academic instructor may assist in conducting practical training.

7.4.11. Ensures standardization of load crew CTKs by aircraft MDS, to the maximum extent possible, to provide optimum interoperability of load crew personnel. Bomber unit CTKs must support loading/unloading of conventional internal stores. CTKs must also accommodate loading stores on all tasked Alternate Mission Equipment (AME) configurations.

**7.5. Academic Training.** Load Crew Academic Training includes initial academic training. Require all load crew members, loading supervisors, and other personnel who maintain specific weapons task qualification to complete initial and recurring academic training. Complete initial academic training before starting practical training. Administer recurring academic training annually. It may also be part of training and recertification for failed loadings. Coordinate training requirements and course control documents with Training Management. Tailor course control documents to unit needs. Cover publications, safety, security, aircraft familiarization, munitions, AGE SE familiarization, test equipment, special tools, and handling equipment. Load crew academic training may fulfill the requirements for explosive safety.

**7.6. Practical Training.** Practical training starts when academic training is complete. Conduct practical training in a facility dedicated to load crew training. Use a facility large enough to accommodate assigned aircraft, required training munitions, and associated SE. Bomber aircraft should have dedicated load training facilities; however, if impractical, provide inside facilities for periods of extreme inclement weather. The practical training facility should also have adequate office space, and an academic classroom with appropriate heating and cooling. The LSC or lead crew members administer practical training to each load crew member on required munitions and aircraft. They ensure that practical training duplicates operational conditions to the maximum extent possible. Other load crew practical training considerations include: familiarity with munitions serviceability criteria and familiarity with the operation of all-available AGE and SE used during loading operations, even if not used on routine basis.

**7.7. Unit Task Assignment List (TAL).** WS develops TALs used during training for all loading operations except those with published job oriented procedures. MPRLs, quarterly evaluations and quarterly ICTs are not training operations. TALs and a copy of the loading technical order will be available at the load site.

**7.8. Integrated Combat Turnaround (ICT) Program.** ICTs will not be accomplished until the unit completes a risk assessment to determine how ICTs can be accomplished safely. In conjunction with flying squadrons, WS coordinates and establishes the unit ICT program. One or more highly qualified AFSC 2AXXX personnel assists in developing and implementing a program which:

7.8.1. Is consistent with unit tasking.

7.8.2. Provides initial ICT academic and practical training for load crews, aircraft maintenance personnel, ATS, and Combat Turn Directors (CTD).

7.8.3. For deploying units, ensures personnel are familiar with their beddown locations and the operational environment, for example, hardened aircraft shelter, flow through, open ramp, etc.

7.8.4. Uses all Primary Munitions (PMs) as a minimum.

7.8.5. Documents all personnel ICT qualifications on AF Form 2435 or in an automated system.

7.8.6. Documents training for nonload crew personnel in the ADS.

7.8.7. Documents initial and recurring evaluations of ICT qualified personnel. The senior WS evaluator has final authority on the overall ICT rating and initiates documentation. Evaluates load crews quarterly and nonload crew personnel semiannually.

7.8.8. Disqualifies personnel who fail to complete required ICT evaluations. ICT disqualification does not necessarily result in munitions decertification.

7.8.9. Incorporates ICT exercises as necessary. Units perform sufficient training and proficiency ICTs to maintain unit readiness.

**7.9. Loading Standardization and Evaluation.** Units possessing aircraft with ICT procedures may use the Certified Combat Load Crew (CCLC) Program.

7.9.1. The Standard Conventional Load (SCL) should be used for all evaluated loads except certifications and evaluated loads in support of flightline operations.

7.9.2. Load crew members certified on more than one type of aircraft must alternate evaluated loads between aircraft.

7.9.3. Certification and training requirements for load crews are based on the following:

7.9.3.1. Load crew members certified in one or more load crew positions may be used in any other position at the discretion of the load crew chief.

7.9.3.2. Load crew chiefs may load in any position.

7.9.4. Certification is required prior to loading of conventional munitions unless under the direct supervision of a minimum of two certifying officials. Exception: If only one of the crew members is not certified, then, only one certifying official is required.

7.9.5. Academic training is given by the LSC, lead crew, or designated instructors. Prior to practical training for initial certification, load crew personnel will receive classroom training on safety, security, and load/unload operations. All academic training will be oriented toward loading proficiency (i.e. functional checks, munition preparation, and loading operation) and may be integrated with practical training.

7.9.6. Practical training, administered by the LSC or lead crew, will duplicate the operational conditions as much as possible.

7.9.7. A load crew will not be certified on more than two types of aircraft, except during munitions or aircraft test programs.

7.9.8. Training munitions, when available, are used for initial certification. If a specific type or model of munition is not on hand, any type or model of the basic item may be used, providing the differences are briefed.

7.9.9. Load crew members must be familiar with munitions serviceability criteria. Blanket rejection of training munitions during load training is not authorized, nor should they be rejected merely because they are inert.

#### **7.10. Certifying, Decertifying, and Evaluating Load Crews:**

##### **7.10.1. Certifying Crews:**

7.10.1.1. Except the LSC and lead crews, load crew members are not certified on more than 10 munitions family groups (MFG), unless waived by ANG/LGMW. The WWM determines the number of additional load crews trained and certified on limited use munitions.

7.10.1.2. Dual position certification of load crewmembers is authorized; however they may not be certified on more than 10 MFGs (unless waived by ANG/LGMW), except the LSC and lead crews. This does not apply to aircraft testing.

7.10.1.3. A minimum of two certifying officials evaluates load crews during initial certification.

7.10.1.4. Current certification of a load crew member is valid worldwide. A Permanent Change of Station (PCS) does not require recertification by the gaining unit, if the individual is certified for the same type of munitions, aircraft, and position. Units, therefore, provide gaining units with the AF Form 2435s.

7.10.1.5. All certified load crews perform proficiency loads monitored by a lead crew or the LSC. The LSC monitors lead crew proficiency loads. Postload inspections of unmonitored weapons loading do not meet these proficiency requirements.

7.10.1.6. For CCLC units, proficiency loadings will be based on the Phase Training status of the load crew. WS may direct 33-1-2 loads if the circumstances dictate.

7.10.1.7. The LSC is required to do proficiency loadings. These loadings are not required to be monitored. For CCLC units, the LSC and lead crews will alternate proficiency loadings between 33-1-2 and 33-1-4 procedures.

7.10.1.8. Loading of one munition within a MFG satisfies proficiency or evaluation requirements for all munitions in the MFG. When a unit is tasked for more than one munition within a group, alternate the munitions to satisfy proficiency loading requirements.

7.10.1.9. Units not utilizing the CCLC training program will perform a quarterly load IAW 33-1-2 or 33-1-4 (Fighters), 33-2-1 (Bombers).. However, if circumstances prevent a formal ICT, a static ICT will satisfy this requirement.

7.10.1.10. For CCLC units, recurring training on functional checks, munitions preparation and fuzing will be conducted semiannually and documented in ADS. Failure to do so will result in decertification.

##### **7.10.2. Decertifying Crews:**

7.10.2.1. Decertify and disqualify individuals if they: fail an evaluation, fail to complete a required evaluation (QE, MPRL, ICT, etc.), or fail to accomplish required recurring academic training.

Administratively decertify and disqualify individuals not completing academic training on all unit-committed munitions.

7.10.2.2. If an individual is TDY, on emergency leave, incapacitated, or involved in an unannounced local or higher headquarters exercise, that person (and load crew, if applicable) need not be decertified/disqualified if the current month's MPRL and evaluation requirements are completed.

Complete all past due evaluations within 60 days of member's return to duty.

7.10.3. Evaluating Crews. As a minimum each load crew member will be evaluated once a quarter on one of the unit PMs (all unit PMs are used on a rotating basis). Maintain load crew integrity for these evaluations. Decertify load crews on all munitions when they fail to accomplish quarterly evaluations unless exempted as specified in the above paragraph. This does not apply to the CCLC units. Apply the following criteria to initial certification, MPRLs quarterly evaluations, and ICTs:

7.10.3.1. Exceeding the unit developed time standard results in a failed rating for the load crew. Failure to meet time standards on an ICT results in disqualification for the load crew chief only if caused by the load crew.

7.10.3.2. More than four errors per crew member results in a failed rating for the individual (this does not apply to ICTs).

7.10.3.3. A safety or reliability error results in a failed rating for the individual.

7.10.3.4. The lack of technical proficiency results in a failed rating for the individual.

7.10.4. Proposed Munitions Load Time Standards: All munitions listed in a single block comprise a family group for the respective aircraft mission type. Units will establish standards for local use. All items require certification in accordance with this chapter, except as noted.

7.10.4.1. Instructions for Table 7.1. The proposed standard load times are for the respective single store, an applicable aircraft station functional check, and installation of impulse cartridges, if required. An additional 10 minutes is allowed for each added aircraft station check (except missile stations) on fighter aircraft. An additional 7 minutes is allowed for each like store added to fighter aircraft loads. Load times are additive when more than one type of munition is loaded on fighter aircraft. For example: if an F-16 is to be loaded with two AIM-9s and a BLU-52, the load crew is allowed 25 minutes for the first AIM-9, 7 minutes for the second AIM-9, and 25 minutes for the BLU-52, for a total of 57 minutes. Units should develop optimum time standards for integrated loads.



**Table 7.1. Maximum Fighter Aircraft Munitions Family Group and Load Time Standards.**

FAMILY GROUP	A/OA-10	F-15	F-16	REMARKS
AIM-7/120		45	35	NOTE 1
AIM-9	30	30	30	NOTE 1
AGM-65	35		35	NOTE 1 & 2
AGM-88			35	
GBU-10/12/24	35		35	NOTE 2
GBU-15			45	NOTE 2
GBU-27			35	NOTE 2
GBU-28			35	NOTE 2
MK 117/M118/M129 MK-81/82/83/84 MK-82SE/M117R MK-82/84	35		35	NOTE 4
CBU-87/89/97/103/104/105	35		35	
SUU-25	30			NOTE 3
CHAFF/FLARES	20	10	10	NOTE 3 & 5
2.75" ROCKETS	35			NOTE 3
20MM/30MM	35			NOTE 3

**Table 7.2. Maximum Bomber Aircraft Munitions Family Group and Load Time Standards.**

FAMILY GROUP	B-1	REMARKS
CONV BOMB MODULE	45	NOTE 6
POSTLOAD CHECKS	40	
MK-82/M117/MK-36/MK-62	40	NOTE 7
180 INCH LAUNCHER	45	NOTE 6 & 8
CBU-87/89/97/103/104/105	40	NOTE 9
GBU-31 (V1 & 3) BLU-109, MK-84	45	

**NOTES:**

1. No time is allowed for the functional check of additional missile launchers.
2. Add 15 minutes for each additional store/LAU 117.
3. Personnel may be task qualified instead of certified.
4. Add 5 minutes if fuze extender is used.
5. Time is for one module, magazine, or ejector channel. Add 5 minutes per each additional module, magazine, or ejector channel.
6. Preload.
7. Add 3 minutes for each store.
8. Add 40 minutes for postload checks, if accomplished as part of the load.
9. Add 5 minutes for each store.

**7.11. Documentation.** Any computer-based, load crew management program or computer-generated form may be used. The LSC will determine the methods for filling out the forms. The LSC keeps load crew records, as a minimum to include AF Form 2435 for each load crew member and AF Form 2419, **Routing and Review of Quality Control Reports, Version 2**, for the most current evaluation for each MFG.

7.11.1. The AF Form 2419 is the evaluation form.

7.11.2. The AF Form 2435 is the record of certification and may be used to document ICT qualification. Evaluated loads are identified by an "E" after the day of the month. Evaluated ICTs may be identified by an "I" after the day of the month. Enter "ED" for the 60-day waiver. The name/signature in block 11 constitutes formal certification. Separate forms are prepared for each person by crew position and MDS aircraft. This form is completed as follows:

7.11.3. Blocks 1 through 6, self-explanatory.

7.11.4. Block 7, each applicable munition from the UCML is listed on a separate line. If the UCML contains more than one item from MFG, the MFG is entered. MFGs are listed as a single entry using the primary tasked item of the group in the title, for example MK-82 MFG is entered when the MK-82 is the primary tasked item from its group. Separate entries are made for ICT qualification, postload checks, and CFLs as applicable.

7.11.5. Block 8, dates are entered upon certification / ICT qualification and CFLs.

7.11.6. Blocks 9 and 10, self-explanatory (also used to record ICT disqualification).

7.11.7. Block 11, Signature of certifying officials are entered only upon certification after completion of blocks 7 and 8. Signatures may be omitted for ICTs.

7.11.8. Block 12, list each individual munition separately. MFGs are not used. Enter the date the MPRL, CFL, quarterly evaluation, or ICT was accomplished in the applicable month column. Enter one of the following codes in the month column if the required loads are not completed: temporary duty (TD), leave (LV), incapacitated (ED), or exercises (EX). The letter "E" is placed after the date for the quarterly evaluation regardless of rating. The letter "E" is not used for ICT evaluation.

7.11.9. ACC Form 240, **Integrated Combat Turnaround Evaluation**, may be used to evaluate ICTs.

**7.12. Weapons Task Qualification.** A weapons task qualification is a munitions related task not requiring certification. Personnel receive initial and annual recurring training for these operations. Recurring training may be conducted during normal flightline operations. WS and designated CCLC instructors (2W1X1) provide this training and records it in the automated system. Two or more personnel in AFSC 2W1X1 (unless otherwise specified) may perform the following:

7.12.1. Install and remove impulse cartridges, if the task is not part of a loading operation (LG may waive on a case by case basis for non 2W1X1 to install/remove carts).

7.12.2. Install and remove chaff and flare magazines (may be non-2W1X1 personnel who are task qualified).

7.12.3. Load and unload practice bombs.

7.12.4. Perform portions of the conventional loading checklist, which pertain to delayed flight or alert, immediately prior to launch, and safing procedures (may be non-2W1X1 personnel, except for Load Crew Chief positions).

7.12.5. Load and unload captive missiles, acceleration monitor assemblies (requires three people) (one must be a 2W1X1).

7.12.6. Load and unload ammunition in internal and external gun systems (GAU-8 requires three people).

7.12.7. Perform munitions and missile isolation procedures to facilitate other maintenance (may be non-2W1X1 personnel).

7.12.8. Install and remove practice bomb adapter rack and cluster rack adapter.

7.12.9. Load and unload helicopter pyrotechnics (may be non-2W1X1 personnel).

7.12.10. In bomber units only, performs transfer (mate/demate) and transport procedures involving inert training weapons.

7.12.11. Install/remove helicopter gun systems (GAU-2, M240, ) (may be non-2W1X1 personnel).

- 7.12.12. Handle ground loading of ammunition, boxes, and feed chutes when ammunition is not installed in the gun or feeder (may be non-2W1X1 personnel).
- 7.12.13. Load and unload 2.75 inch rockets.
- 7.12.14. Install/remove pre-loaded SUU-25 dispensers.

**7.13. CCLC Phase Training Requirements:**

- 7.13.1. Phase I. General Aircraft and Munitions Orientation:
  - 7.13.1.1. Phase I training will be given by designated instructors and documented in ADS.
  - 7.13.1.2. Functional Check Qualification Training will be given by CCLC instructors using applicable tech data and job guides. Document training in ADS.
  - 7.13.1.3. Munitions Preparation and Fuzing Qualification Training may be given by designated 2W0X1 CCLC instructors using applicable loading procedures, appropriate munitions T.O.s, and rejection criteria. Document training in ADS.
  - 7.13.1.4. Initial load crew training and evaluation is given by the LSC or lead crew to each member on UCMLs using 33-1-2 or applicable procedures. Document on AF Form 2435.
  - 7.13.1.5. Aircraft functional checks need not be evaluated as part of the certification process. Munitions may be delivered prefuzed and prewired duplicating the operational conditions to the maximum extent possible. Munitions preparation and functional checks need not be evaluated as part of Initial Load Crew Training providing Phase I Munitions Preparation and Functional Check Training is accomplished prior to the loading operation.
  - 7.13.1.6. Load crews will not upgrade to Phase II until all items in Phase I are accomplished satisfactorily.
- 7.13.2. Phase II. Combat Load Crew Training, Evaluation, and Certification.
  - 7.13.2.1. ICT training and certification using 33-1-4 procedures will be conducted by the LSC/lead crew. Training will include specific safety procedures as they apply to the ICT environment.
  - 7.13.2.2. Evaluation and certification using 33-1-4 procedures will be documented on the AF Form 2419, and recorded on the AF Form 2435.
- 7.13.3. Phase III. Recurring Certified Combat Loading Crew (CCLC) Evaluations.
  - 7.13.3.1. ICT Qualification. As a minimum, each crew member will be evaluated on one ICT per quarter. If circumstances prevent a formal ICT, a static ICT will satisfy this requirement.
  - 7.13.3.2. MFG Proficiency. As a minimum, each crew member will be evaluated quarterly on each certified MFG. However, if circumstances prevent a formal ICT, a static ICT will satisfy this requirement.
  - 7.13.3.3. Functional Checks and Munitions Preparation. As a minimum, each crew member will be evaluated semiannually, using 33-1-2 procedures. For example, munitions preparation may be evaluated in conjunction with an ICT. Crews may also be evaluated performing 30-day functional checks.

## 7.13.4. Phase Training Entries (Example):

CODE	NARRATIVE	DATE COMP	DATE DUE
482 PHASE I	INTRODUCTION	12 MAR 95	
483 PHASE I	ACFT GENERAL	12 MAR 95	
486 PHASE I	T.O.s-CHECKLISTs-TALs	12 MAR 95	
488 PHASE I	MUNITIONS IDENTIFICATION	12 MAR 95	
489 PHASE I	INITIAL MUNITIONS PREPARATION FUZING	12 MAR 95	
492 PHASE II	INTRODUCTION	14 MAR 95	
495 PHASE II	LOADING CREW TRAINING -4	14 MAR 95	
496 PHASE II	INITIAL EVALUATION 33-1-4	14 MAR 95	
497 PHASE III	MUNITIONS PREP AIM-7	16 MAR 95	16 OCT 95
498 PHASE III	MUNITIONS PREP AIM-9	16 MAR 95	16 OCT 95
500 PHASE III	MUNITIONS PREP ALE 40 CHAFF/FLARE	16 MAR 95	16 OCT 95
502 PHASE III	MUNITIONS PREP/FUZE GBU-10/12	16 MAR 95	16 OCT 95
503 PHASE III	MUNITIONS PRE/FUZE MK-20	16 MAR 95	16 OCT 95
507 PHASE III	ACFT FUNCTIONAL CHECKS	16 MAR 95	16 OCT 95

**NOTES:**

1. All Phase I and Phase II dates should reflect the date of training.
2. Phase I training should be a one-time training requirement unless decertification action is taken.
3. Phase II is initial 33-1-4 training. All Quarterly Proficiency Required Loadings (QPRLs) will be accomplished in Phase III.
4. In Phase III munitions preparation and functional checks are required on a semiannual basis and should be listed separately.

**7.14. Air Defense Guidance:**

7.14.1. Units will develop Force Generation (FG), ICT plans, and munition employment plans to cover local and deployed operations. A munition employment plan may be included as an annex to the FG and ICT plans.

7.14.2. The LG or designated representative will decide what partial loads may be accomplished on aircraft that are not fully loaded during FGs and ICTs.

7.14.3. During FG exercises, all safety pin and missile safety devices may be removed. Prior to an aircraft being placed on alert, units located on civilian airports may leave safety pins and missile safety devices installed.

7.14.4. Generated aircraft, without aircrews assigned, do not require safety pins or missile safety devices to be removed. During FGs, qualified aircrews and ground crews may remove and install safety pins and missile safety devices.

7.14.5. Detached Alert Detachment (DAD) Training Responsibilities and Load Crew Requirements:

7.14.5.1. Certification and training of load crew members will be the same as home station standards.

7.14.5.2. The most qualified 2W171 at the DAD will be appointed as a member of the parent LSC/lead crew, and initially certified/evaluated as a load crew chief by the WWM or designated official. The WWM will determine the appropriate evaluation interval.

7.14.5.3. At least two of the assigned 2W1X1s will be certified as load crew chiefs.

7.14.5.4. Initial certification of other crew members may be accomplished by the parent unit LSC/lead team member. Crew members may be used to load in other positions at the discretion of the load crew chief. Dual certification is authorized.

7.14.5.5. Other personnel may be certified as augmentee loaders.

7.14.5.6. Load crew training and certification will be documented and routed to the parent unit LSC and returned to the DAD for filing.

7.14.5.7. DAD load crews need not be ICT qualified.

7.14.6. Load crew members may accomplish captive missile inspections provided they are qualified to perform these inspections.

#### **7.15. Chaff/Flare Task Qualification Requirements and Restrictions for C-130, C-141, C-5, and KC-135 Units.**

7.15.1. Chaff/Flare loading task consists of installation/removal of chaff and/or flare modules. Only qualified personnel are authorized to perform loading tasks. **NOTE:** 139<sup>th</sup> AW/AATTC Load Training Personnel will train units on academics, loading, standardization, and documentation.

7.15.2. Establish WWM, LSC when applicable, and LC functions to: (1) ensure chaff/flare loading operations are conducted safely; (2) provide initial and recurring load training; and (3) serve as the focal point for all chaff/flare loading issues. The WWM, LSC and/or LC conduct training IAW this instruction and other applicable directives. Load qualification training is training conducted for the express purpose of qualifying personnel to load chaff/flares. It will be provided by qualified WWM, LSC and/or LC personnel only. WWM, LSC and/or LC must maintain their qualifications. The WWM and LC functions may be additional duty positions. When the base consists of more than one MAJCOM unit the local commander may appoint a joint installation WWM and LC for both units by establishing a support agreement to provide for WWM and LC functions. At ANG installations where a weapons standardization program is already established, the WWM and WS will manage the chaff/flare loading standardization program as established in the following paragraphs.

7.15.3. Wing Weapons Manager:

7.15.3.1. Appointed by the LG to develop and oversee the chaff/flare loading standardization program, set standards, develop local policies and procedures, and interpret tech data/other directives which govern the chaff/flare loading standardization program. Develops a Task Assignment List (TAL) which may be used during training for all chaff /flare loading operations. The WWM is typically a 2A1X7; however, other 2AXXX and 2WXXX personnel may be assigned by the LG to perform this function. The LG appoints a supervisor to perform the WWM functions; the appointed WWM may also perform LC duties with LG approval.

7.15.3.2. Receives initial and recurring (if non 2W1XX) load qualification training, documented on AF Form 2419, from qualified personnel at the 139<sup>th</sup> AW/AATTC St. Joseph, MO, and maintains currency on chaff/flare loading task. Once trained the WWM develops and administers the unit's chaff/flare load training program.

7.15.3.3. Appoints a minimum of two (2) personnel as the LC. The WWM, WS, and/or LC provide initial and recurring qualification training.

7.15.3.4. Selects sufficient personnel to be chaff/flare load qualified to support the unit's mission and maintains a qualification status system to depict trained personnel and their qualification status. Initial qualification will be documented on AF Form 2419 and a recurring training status system will identify the personnel by name, employee number, qualification date, and dates when recurring training is due. The G081, Weapons Load Crew Management Program (WLCMP) or CAMS is an acceptable system.

7.15.3.5. Establishes time standards for loading tasks. Standards should be based on local conditions and must be designed to expedite loading during periods of increased operations tempo.

7.15.3.6. Reviews AFTO Forms 22 that pertain to chaff/flare loading tech data prior to submission to QA.

7.15.3.7. Serves as an advisor to the wing exercise evaluation team. Helps develop local chaff/flare loading exercises.

7.15.3.8. Works with the local Grounds and/or Explosives safety officer/NCO to develop an OI for handling chaff/flare loaded aircraft IAW AFMAN 91-201, *Explosives Safety Standards*, and AFI 91-202, *The USAF Mishap Prevention Program*. As a minimum, this OI covers: launch/recovery procedures for chaff/flare loaded aircraft, chaff/flare storage and transportation, and partial ejected chaff/flare procedures.

7.15.3.9. Ensures standardization of chaff/flare loading CTKs to the maximum extent possible. Chaff/flare loading CTKs must include all tools and equipment necessary to support applicable equipment configurations.

7.15.3.10. Coordinates scheduling of personnel for chaff/flare load training. The WWM may delegate this duty to the LSC and/or LC.

7.15.3.11. Ensures training munitions match the characteristics and feel of live munitions, weight, dimensions, etc.

7.15.3.12. Coordinates with Plans, Scheduling, and Documentation (PS&D) to obtain chaff/flare dispensing system-equipped aircraft for training purposes.

7.15.4. LSC and/or LC:

7.15.4.1. Appointed by the WWM to assist the WWM in managing the chaff/flare loading standardization program. The LSC/LCs purpose is to train and qualify personnel to load chaff/flare. The LC may also perform chaff/flare load duties. The LC members are typically a 2A1X7 technician; however, other chaff/flare load-qualified 2AXXX and 2WXXX personnel may be assigned by the LG/CC to perform this function. LSC/LC members are appointed in writing by the WWM. The LC consists of a minimum of two personnel. On a case by case basis, WWMs may request a one-time waiver for one person to serve as LC for purpose of providing practical training and qualification. Submit waiver request to the ANG/LGMW for approval, upon approval by the ANG/LGMW use only training munitions. The number of LC members should be based on workload, with consideration given to their ability to maintain proficiency on all applicable MDSs.

7.15.4.2. Provides LC members with initial and recurring load qualification training. At least two LC members are required to conduct practical training.

7.15.4.3. Monitors personnel qualifications to ensure required academic and practical training is completed. Takes qualification action if recurring requirements are not met.

7.15.4.4. Performs spot checks on personnel to evaluate their proficiency. Disqualifies personnel who commit unsafe acts, violate tech data procedures, or fail to demonstrate proficiency.

7.15.4.5. Develops and coordinates training schedules and provides them to PS&D for inclusion in the appropriate schedule (monthly, weekly, etc.) and the Maintenance Training office. LCs forward training requirements to the WWM.

7.15.5. Academic and Practical Training: Academic and practical training must be provided during initial and recurring load qualification training. Academic training is required before practical training is accomplished. Minimum academic training must include chaff/flare loading publications familiarization, aircraft familiarization, chaff/flare types, safety, security, support equipment familiarization, and special tools. Practical training must be completed within 14 days of satisfactorily completing academic training and must closely duplicate operational conditions. As a minimum, practical training will include chaff/flare module serviceability criteria, actual chaff/flare loading, and operation of support equipment/AGE used during loading operations. TALs and the loading technical order (33-1-2) must be available at the load-training site.

7.15.6. Qualifying Chaff/Flare Load Personnel: Load qualification training consists of academic and practical training. Personnel are considered qualified upon successful completion of training provided by a qualified WM, LSC and/or LC. Personnel must re-qualify semi-annually by completing recurring load qualification training. The LG may increase frequency of load qualification training to ensure proficiency. Document initial load qualification training in the qualification status system.

7.15.7. **Disqualifying Chaff/Flare Load Personnel.** Although not all-inclusive, the following criteria constitute grounds for disqualifying personnel from chaff/flare loading duties: (1) failing to complete recurring training (2) committing a safety or reliability error (3) lack of proficiency. Document disqualification in the member's qualification status system.

7.15.8. **Transient Aircraft.** Apply the following rules when working transient aircraft:

7.15.8.1. If no tech data is available, then under no circumstances will personnel attempt chaff/flare operations.

7.15.8.2. If tech data is available, then qualified personnel may perform chaff/flare load operations.

7.15.8.3. If tech data is available, but no one is qualified on the transient aircraft, then the LG may authorize the WWM, LSC and/or LC to dearm and/or unload the aircraft.

7.15.9. **Expenditure Documentation Requirements.** Annotate AF Form 2434, on all aircraft configured and loaded to release or fire chaff/flares. Record the number and type of chaff/flares in the appropriate munition column. A locally developed form may be used, as long as it includes all AF Form 2434 data elements. Send AF Form 2434 (or equivalent) to the Munitions Storage Section or MASO/MASO Representative, as applicable, at the end of each flying day.

7.15.10. **Chaff/Flare Buildup.** Chaff/flare magazine buildup will only be accomplished by 2WO/2W1 personnel or individuals task-qualified for chaff/flare buildup when supervised by a fully qualified 2WO/2W1. Units performing chaff/flare buildup will do so only in approved facilities/locations. Units must have an approved explosive site plan on file with ANG Weapons Safety prior to initiating chaff/flare buildup or storage operations.

**7.16. Terms Explained.** The following terms apply to the weapons standardization program:

7.16.1. **All-Up-Round (AUR).** A munitions item which is shipped and stored in a complete, ready to use configuration. An AUR munition requires no pre-assembly or checked prior to use.

7.16.2. **All-Up-Round Container (AURC).** A container used to ship, store, and handle AUR munitions. Some AURCs are designed to load munitions directly from them onto an aircraft.

7.16.3. **Certification.** The act of verifying and documenting a person's ability to load a particular type of aircraft and munition or Munitions Family Group (MFG) within established standards.

7.16.4. **Certified Load Crew Member.** A load crew member who has been trained and certified, by position, IAW this chapter.

7.16.5. **Competent Familiarity Loading (CFL).** The loading of a support munition which requires only that the person have a satisfactory fundamental knowledge of the loading operation. The performance of CFLs sets a basic level of proficiency in order to make future certification easier. Evaluation criteria in this chapter does not apply to CFLs. CFLs are accomplished annually.

7.16.6. **Decertification.** The removal of the certification status of a person which precludes them from loading a specific type munition or MFG.

7.16.7. **Dual loading operations.** A conventional munitions loading operation on fighter or bomber aircraft accomplished simultaneously by two load crews.

7.16.8. **Evaluated Load.** A loading task which is assessed in accordance with the procedures in this chapter.

7.16.9. **Integrated Combat Turnaround.** An exceptional and simultaneous aircraft fueling, servicing and the unit's ICT risk assessment, performed by a trained and qualified team using approved ICT checklists/tech data procedures under the direct supervision of an Aircraft Turnaround Supervisor (ATS). The ICT is performed in accordance with Weapons Standardization Section procedures and is a start to finish operation performed in one location.

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## Chapter 8

### SPECIAL MAINTENANCE ACTIVITIES

**8.1. General.** This chapter provides information on activities not otherwise covered in this instruction.

**8.2. Transient Aircraft.** Provide maintenance for all transient aircraft as required (the placement of this function will be determined locally).

8.2.1. The supervisor ensures required maintenance is accomplished and reimbursement documentation is completed, as required. Close coordination with supply and financial management is essential to a well-managed, transient aircraft maintenance operation. Communication and procedure should be tailored to ensure the cost of transient aircraft maintenance does not adversely impact maintenance of the unit's primary mission.

8.2.2. The scope and depth of required technical data to support transient aircraft will be determined locally. If technical data and qualified personnel are not available then the pilot or qualified air crew member must remain at the aircraft while basic servicing operations are performed. Under no circumstances will maintenance be performed on transient aircraft without technical data and qualified personnel.

8.2.3. The MOC normally keeps the status and location of all transient aircraft. Post the priority of each transient aircraft on the status board or ADS based on the appropriate maintenance priority. MOC coordinates with the appropriate agency for aircraft maintenance support.

8.2.4. Arming, dearming, and munitions unloading operations on transient aircraft may be performed by any weapons load crew certified/qualified on the munitions and aircraft. The LG may direct the Loading Standardization Crew (LSC) or a lead crew to arm, dearm, and unload an aircraft on which they are not certified/qualified, if appropriate technical data is available. In such cases, the aircrew or person familiar with the aircraft should be available for consultation on aircraft peculiarities. If these cannot be met, request help from the owning unit. Local procedures must be developed to control impulse cartridges removed from transient aircraft.

8.2.5. Unit maintenance procedures and safety directives will be adhered to by T/A personnel.

8.2.6. QA will ensure compliance with unit directives.

**8.3. Alert Detachment.** Management latitude is given to the Chief Enlisted Manager (CEM) in recognition of the factors affecting each alert detachment. The detachment provides for immediate launch, recovery, repair, and service of alert aircraft; on/off equipment and support equipment maintenance within the capability of assigned personnel, equipment, and facilities.

8.3.1. Maintenance Organization. Detachment manning is based on workload, aircraft type, and location of alert detachments. Each detachment maintenance organization will have a CEM who will ensure its efficient operation.

8.3.2. The CEM manages the detachment maintenance complex. The CEM will plan, schedule, control, and direct the use of all maintenance resources and be responsible for the following:

8.3.2.1. Ensure a quality assessment program is established.

8.3.2.2. Control the assignment and use of maintenance personnel. Ensure all work shifts are adequately supervised.

8.3.2.3. Coordinate with the detachment Operation activities in establishing maintenance support requirements.

8.3.2.4. Ensure requirements to support the maintenance mission are included in plans, programs, and host-tenant agreements.

8.3.2.5. Control assignment and use of maintenance facilities and equipment at the detachment.

8.3.2.6. Administer the detachment safety program.

8.3.2.7. Designate production inspectors.



- 8.3.2.8. Manage the detachment financial program.
- 8.3.2.9. Establish a maintenance training program.
- 8.3.2.10. Ensure supply management procedures are accomplished.
- 8.3.2.11. Monitor the load crew certification program.
- 8.3.2.12. Establish an Oil Analysis Program for assigned equipment.
- 8.3.2.13. Set up a debriefing program.
- 8.3.2.14. Comply with calibration requirements established by either the host base or supporting unit.
- 8.3.2.15. Establish necessary security programs.
- 8.3.2.16. Provide liaison between the detachment and parent unit maintenance program.
- 8.3.3. The Alert section will consist of selected crew chiefs and personnel who have been task-qualified to perform preflight, postflight, servicing, launching, etc.
- 8.3.4. The Support section consists of specialists and weapons load crew personnel qualified to perform both on- and off-equipment maintenance and task-qualified to assist in alert section duties as required.
- 8.3.5. Weapons Load Crews consist of personnel task-qualified to support the unit mission as outlined in Chapter 7.

**8.4. Combat Readiness Training Centers (CRTC).** Training Centers have ground support equipment and maintenance shop facilities IAW AFMAN 91-201; Para 6.12.1. Ensure applicable site plans & maps are maintained within the flight to be used by deployed forces. These forces need the use of CRTC bases and gunnery ranges for short term exercises and annual deployments. CRTC personnel maintain the support equipment and facilities and do not have aircraft or maintenance personnel for direct support of the deployed unit. Deployed units operate under their own management procedures.

- 8.4.1. The CRTC has shops and equipment needed to support limited maintenance. Once issued to the deployed unit, the maintenance of the support equipment and operation of the shops is the responsibility of the deployed unit. However, the responsibility for the assigned equipment remains with the CRTC.
- 8.4.2. The CRTC is organized as a consolidated maintenance function. Due to its small size, several management functions may be assigned to one individual. CRTC personnel will not be integrated into the organization of deployed units. The CRTC remains a separate and independent function.
- 8.4.3. The maintenance chief is the Chief Enlisted Manager (CEM) for the CRTC and establishes management procedures following the guidelines of this publication. The CEM will:
  - 8.4.3.1. Publish necessary OIs.
  - 8.4.3.2. Publish a directive with responsibilities and requirements for the CRTC and deployed units.
  - 8.4.3.3. Brief deployed unit maintenance supervisors on their responsibilities for the use of the facilities and equipment and their relationship to the CRTC.
  - 8.4.3.4. Ensure deployed units use their own supply support to the maximum extent possible.
  - 8.4.3.5. Ensure assigned support equipment and facilities are maintained.
  - 8.4.3.6. Ensure supply discipline by assigned personnel.
  - 8.4.3.7. Establish a quality assessment program.
  - 8.4.3.8. Administer a CRTC safety program.
  - 8.4.3.9. Develop and administer a FOD program.

**8.5. Hot Refueling Procedures.** Hot refueling is the transfer of fuel into an aircraft having one or more engines running. The purpose of hot refueling is to reduce aircraft ground time, personnel and equipment support requirements, and increase system reliability by eliminating system shutdown and subsequent restart. Refer to the following sources for additional guidance: T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding and Bonding*; T.O. 00-25-172CL-4, *Aircraft Servicing with USAF R5, R9, R11, Servicing Vehicles*; T.O. 37A9-3-11-1CL-1, *Operational and Organizational Maintenance, Not Refueling and Hot Integrated Combat Turn Around Procedures*, and AFOSH Standard 91-100, *Aircraft Flightline Ground Operations and Activities*. When hot refueling capability is selected, unit commanders ensure compliance with this publication.

**8.6. Prerequisites:** Hot refueling is not accomplished until the unit completes a risk assessment.

Location, equipment requirements and personnel qualifications are initially certified by an ANG certification team. The following documents are required prior to hot pit refueling site certification:

8.6.1. Each proposed site must be identified by coordinates on a map (1-400 scale). Each facility, which is within the distance identified in T.O. 00-25-172, Table 4-2, must be identified as to its use/contents and its distance in feet from the refueling site/operation. Other refueling sites, aircraft parking areas, etc. also need to be identified. All distances must be shown even if a violation exists. If there are no violations, state so on the request cover letter. Procedures such as aircraft taxi routes should also be shown. Use arrows or dotted lines to show taxi directions both entry and exit. State any restrictions needed to comply with the technical order.

8.6.2. State the type of equipment used for hot refueling, (hose carts, truck, etc.). Show the location of any fixed fuel pits and usual location of cart or truck if used.

8.6.3. State whether or not all hot refueling/ICT areas comply with the quantity-distance separation requirements of AFMAN 91-201 in relation to surrounding exposed sites/potential explosion sites.

8.6.4. Hot refueling requires detailed procedures published in appropriate technical orders and unit developed checklists. Unit checklists include detailed procedures, both normal and emergency, to meet requirements of the local environment.

8.6.5. Units publish a Wing Instruction outlining local procedures and additional precautions required for hot refueling, including hot refueling with ordnance, when authorized, IAW T.O. 00-25-172.

**8.7. Base Certification.** Prior to initial implementation of hot refueling; units are certified by the ANG, hot refuel, site certification team IAW T.O. 00-25-172. Certification involves training a cadre of instructor personnel and approving specific hot refueling sites.

8.7.1. After initial ANG certification, unit commanders document by position, a unit certification team to recertify existing hot refueling sites and to approve additional on-base and deployment location hot refueling sites. Additional unit-certified hot refueling sites must meet requirements in T.O. 00-25-172. A unit certification team consists of the following:

8.7.1.1. Field grade, maintenance officer as certifying official.

8.7.1.2. Representative from the Airfield Manager's Office, knowledgeable of aircraft taxiways, parking ramp and hot refuel, safe distance requirements.

8.7.1.3. Maintenance AFSC member from the unit Quality Assurance (QA) office, knowledgeable of hot refueling procedures.

8.7.1.4. Safety member, minimum SSgt 1SO71 or civilian equivalent, task-qualified in site certification and hot refueling operations. **NOTE:** Unit safety personnel will also receive phase training listed below.

8.7.1.4.1. Fuels management, flight member, AFSC 2S34 or 2F071/91/00.

8.7.1.4.2. Civil engineering member, AFSC 3E271 or civilian equivalent, familiar with aircraft ramp requirements for hot refueling.

8.7.2. Identify unit-approved sites on the aircraft parking plan. Both the Base Civil Engineer and QA maintain copies of hot refueling sites on file. Forward record copies to ANG, site certification, team members.

8.7.3. Each unit hot refueling site will be recertified by the unit recertification team, and approved by ANG, when one of the following occurs:

8.7.3.1. Change in the unit MDS, or an additional MDS.

8.7.3.2. Construction of new hot refueling sites.

8.7.3.3. Change in refueling equipment.

8.7.3.4. Change in current certified sites.

**8.8. Hot Refueling Team Members:**

8.8.1. Hot Pad Supervisor. Responsible for overall supervision of hot refueling operations when two or more aircraft are simultaneously hot refueled (multiple hot refueling). Possesses a 7 level or higher qualification in an aircraft maintenance AFSC, and is hot refueling supervisor, "A" member qualified, or qualified flight engineer when servicing the HH-60G aircraft.

8.8.2. Hot Refuel Supervisor, "A" Member. Hot refuel task-qualified, capable of supervising hot refuel crew, possesses an aircraft maintenance AFSC 5 level qualification, and 1 year experience on the weapon system or qualified flight engineer when servicing the HH-60G aircraft.

8.8.3. Hot Refuel Crew, "B" Member. Hot refuel task-qualified, possesses an aircraft maintenance AFSC 3 level qualification, and 1 year experience on the weapon system or qualified flight engineer when servicing the HH-60G aircraft.

8.8.4. Fuels Specialist, "C" member. Hot refuel task-qualified and 3-level qualification.

8.8.5. Additional Hot Refuel Crew, "D" member. Hot refuel task-qualified, possesses an aircraft maintenance AFSC 3 level qualification. Use "D" members as required by applicable aircraft technical data.

8.8.6. Hot refueling team members may be multi-MDS qualified when more than one weapons system is permanently assigned to a unit. After initial certification on each MDS, personnel may update their hot refueling currency by performing hot refueling on any MDS. Section chiefs ensure personnel maintain proficiency on each assigned MDS.

**8.9. Training/Certification:**

8.9.1. Conduct qualification training of hot refueling personnel in three distinct phases. Stress safety requirements, emergency procedures and equipment inspection in all three phases of training. Procedures in T.O. 37A9-3-11-1CL-1 and T.O. 00-25-172CL-4 are taught to hot pad supervisors. Refuel supervisors ("A" member), and fuels specialists ("C" member). Conduct all phases of training in joint sessions including 2F0X1 personnel and all maintenance AFSCs. Jointly teach training sessions using both fuels (2F0X1) and maintenance AFSC instructors. QA is responsible for overall management and evaluation of the program. The LG designates a unit OPR for hot refuel training in a local supplement.

8.9.1.1. Phase 1: "Familiarization" phase. Designated instructors familiarize trainees with applicable technical data, procedures and guidance for hot refueling. Place special emphasis on procedures for hot refueling with ordnance loaded, when authorized.

8.9.1.2. Phase 2: "Hands-on" phase. Apply information learned in Phase I to develop in-depth knowledge and proficiency in all facets of hot refueling. Include proper operation, preventive maintenance, use of hand signals, and emergency procedures. Training simulates hot refueling by performing all hot refueling tasks without aircraft engines running. Designated instructors demonstrate tasks, require trainees to perform tasks, practice emergency procedures, critique performance, and provide additional training as required.

8.9.1.3. Phase 3: "Demonstration/Certification" phase. Actual demonstration of hot refueling under the supervision of designated instructors with aircraft engines running. Trainer/Evaluator/Certifier (T/E/C) or QA certifies individuals upon successful demonstration of hot refueling.

8.9.2. If required, and in coordination with QA, identify personnel as QA augmentees to train, evaluate, and certify unit personnel. Limit augmentees to one primary and alternate per unit. QA ensures augmentees conduct evaluations using procedures outlined in this publication, applicable aircraft technical orders and local procedures. Augmentees are certified by a T/E/C or by ANG, site certification team.

8.9.3. H-60 aircrew members are trained/certified IAW 58 SOW formal School Courseware.

**8.10. Personnel Certification/Decertification:**

8.10.1. Recertified personnel must obtain recertification within 180 days of decertification date or repeat Phases 1, 2, and 3 of hot refuel training.

8.10.2. Additional training/certification requirements for hot refuel team members, supervisors, trainers, evaluators and certifiers are outlined in Table 8-1. HH-60G aircrew member currency is maintained IAW MCI 11-HH60.

8.10.3. Document training/proficiency for personnel performing, evaluating, supervising or instructing hot refuel operations as follows:

8.10.3.1. Document all aircraft maintenance and 2F0X1 personnel Phase I, II and III initial training in the Career Field Education Training Plan (CFETP) or equivalent. For AFSCs where “refuel aircraft with engines operating” is not contained in the Job Qualification Standard (JQS), use AF Form 797, to document initial hot refuel training. Track recurring hot refuel certification in Core Automated Maintenance System (CAMS).

8.10.3.2. AFSC 2F0X1 personnel use AF Form 1098, **Special Task Certification and Recurring Training** to document Phases I, II, and III initial and recurring hot refuel training. Indicate multiple practical performances by placing a number before the letter in column F. Only two performances per day require documentation. For example, a 2/P for an “A” team member indicates an individual performed two hot refuels as the supervisor. For technical sergeant and below, file AF Form 1098 in individual’s AF Form 623, **On-the-Job Training Record**.

8.10.3.3. Enter, by position, all personnel qualified to perform hot refueling on the Special Certification Roster (SCR).

**Table 8.1. Hot Refueling Training/Certification Requirements.**

<b>Position</b>	<b>Required Training</b>	<b>Conducted by Whom</b>	<b>Do What</b>	<b>How Often</b>	<b>Special Requirements</b>
T/E/C	I, II, III	MAJCOM	Perform	2 Hot Refuels Annually	Annual Evaluation by QA OIC/NCOIC
QA Augmentee	I, II, III	QA T/E/C	Perform	2 Multiple Hot Refuels Annually	Annual Evaluation T/E/C EPE Required
Hot-Pad Supervisor	I, II, III	T/E/C or QA	Supervise or Perform as "A" Member	2 Multiple Hot Refuels Annually	Annual Evaluator T/E/C or QA
Hot Refuel A, B, C, D Member	I, II, III	T/E/C or QA	Perform in any Qualified Position	2 Hot Refuels each 180 days, "C" Annually	Annual Evaluation T/E/C or QA
Decertified Augmentee or Hot Pad Supervisor	Repeat II, III	QA T/E/C	Perform, Supervise, and Certify	2 Multiple Hot Refuels Within 180 Days of Decertification	EPE Required for Augmentee
Decertified A, B, C, D Member	Repeat II, III	T/E/C or QA	Perform	2 Hot Refuels Within 180 Days of Decertification	None
Decertified QA T/E/C	Repeat II, III	QA T/E/C	Perform, Instruct, and Certify	2 Hot Refuels Within 90 Days of Decertification	EPE Required
All Personnel Decertified	Repeat I, II, III	MAJCOM	Perform	N/A	Determined Case-by-Case MAJCOM

Legend: EPE - Evaluator Proficiency Evaluation  
T/E/C - Trainer/Evaluator/Certifier

**8.11. Joint Engineering Data Management Information and Control System JEDMICS).** JEDMICS is the DOD Standard for managing and controlling engineering drawings and related data. The Air Force engineering data storage, distribution, and control process applies to all levels of organizations and is intended to make efficient and effective use of that data to enhance ANG maintenance capabilities. Complete and full access to engineering data managed and stored at the EDSC (Engineering Data Support Center) through JEDMICS will be given to Government employees, both military (excluding Traditional Guardsman) and civilian. Documentation requirements are outlined in AFMAN 21-407 (DRAFT) with specific instructions applying to ANG members on the ANG JEDMICS Web Site at <https://airguard.ang.af.mil/lg/lgm/lgmm/mis/jedemics/default.htm>

8.11.1. A JEDMICS Access Request Form will be initiated for each individual requiring access, and will be approved by the LG. In addition, a Boeing Rights Guard Letter and a Limited (Proprietary) and Distribution Controlled Data Agreement Letter must accompany the initial request. Forms can be obtained from the ANG JEDMICS web site.

8.11.2. Responsibilities of the LG.

8.11.2.1. Overall responsibility for the engineering data programs is assigned to the LG as part of the total production effort.

8.11.2.2. Assign a primary and alternate point of contact (POC) for JEDMICS program coordination. The primary POC will be a representative from the Quality Assurance Office. Additional information required will consist of the units complete mailing address, POCs DSN, FAX numbers, and E-mail address. This information will be provided to the ANG Program Manager.

8.11.2.3. Approve and limit access to engineering data based upon mission requirements.

8.11.2.4. Ensure that software is not loaded to the Local Area Network (LAN).

8.11.2.5. Ensure that drawings obtained from C-130, F-15, F-16 compact disks, as applicable, are not used to perform maintenance in lieu of accessing JEDMICS. Compact disks containing engineering drawings do not replace requirements to access JEDMICS. The intent of the CD-ROM program is to enhance maintenance capabilities while in a deployment mode where JEDMICS is not "readily available".

8.11.3. Quality Assurance will manage the JEDMICS Program.

8.11.3.1. JEDMICS contains "Limited (proprietary) Rights Data". Establish an LOI identifying a means for: controlling, providing security, redistribution, and destruction of drawings. Procedures will include a frequency for deleting downloaded data files from the PC hard drive (i.e. monthly), not to exceed quarterly, and will include ~~or~~ destroying data obtained from other sources. With the current capabilities of digital access to available data, permanent copies are not authorized, except when QA determines a hard copy is required for the historical records.

8.11.3.2. Ensure that only authorized individuals access JEDMICS.

8.11.3.3. Ensure drawings affecting "safety of flight" or "nuclear certified equipment" is coordinated through QA and the Safety Office, and written approval is received from the primary ALC prior to repair of assets.

8.11.3.4. Ensure data is destroyed in accordance with written instructions.

8.11.3.5. Ensure drawings are controlled and limited to only authorized personnel.

8.11.3.6. When discrepancies (illegible, missing, etc) are found the user will prepare documentation as outlined in AFMAN 21-407 (DRAFT). A courtesy copy will be forwarded to the ANG JEDMICS Program Office.

8.11.4. Contract Support Personnel:

8.11.4.1 Contract Support Personnel with an active contract tasked with performing maintenance on ANG assigned weapon systems, will not have direct access to engineering data in JEDMICS and/or through approved C-130, F-15, F-16 compact disks.

8.11.4.2 Initially and annually thereafter or as changes in personnel occur, the Contract Site Manager will submit a letter, endorsed by the QAR, to the ANG JEDMICS Program Office requesting approval for contract personnel to have "LIMITED" access to engineering data, in the performance of their task. The letter will provide:

8.11.4.2.1. Unit Address, DSN, Fax, and Commercial Telephone numbers for QAR and Contractor Site Manager.

8.11.4.2.2. Email address for QAR and Contractor Site Manager (if assigned).

8.11.4.2.3. Applicable weapon system.

8.11.4.2.4. Names of contract support personnel requiring data and a signed Boeing Rights Guard Letter attached for each individual.

8.11.4.3. It is understood that access to data marked "LIMITED (PROPRIETARY) RIGHTS DATA" will only be approved by submitting an AF Form 1147 to the appropriate EDSC as identified in AFMAN 21-407 (DRAFT) with a courtesy copy filed with the ANG JEDMICS Program Office.

8.11.5. Military Engineering Asset Locator System (MEDALS). Mandated by public law 98-525, MEDALS serve the DOD as an effective and efficient central locator system for engineering drawings stored throughout the DOD. MEDALS is a computer based system accessible via the Internet, and is located at the Defense Logistics Information Services (DLIS) in Battle Creek, Michigan. ANG units may apply for MEDALS access by downloading MEDALS instructions, applications, and User's guide at their web site: <https://www.dlis.dla.mil/medals>. ANG users are not authorized to obtain Electronic Drawing Order Request (EDOR) privileges.

**8.12. Mode 4 Reliability.** An operable Mode 4 is required for every equipped fixed and rotary wing aircraft sortie, with the sole exception of missions where this requirement would preclude the accomplishment of essential training. The Mode 4 manager will establish a program to ensure accomplishment of Mode 4 testing. The OG/CC will also assign a Mode 4 manager to ensure Mode 4 system operability and to ensure testing and documenting procedures are followed. The program:

8.12.1. Includes local record-keeping procedures that must be auditable and reportable when required.

8.12.2. Includes procedures to notify aircrew members of check results and effect repairs on aircraft having discrepancies. Invalid Mode IV replies will not cause a CONUS training sortie to be aborted; however, a work order will be generated for maintenance after flight.

8.12.3. Operational Mode 4 checks must be performed before or during flight, resources permitting. Requires at least 70 percent of possessed aircraft to be checked monthly.

8.12.4. Includes procedures for performing pre-launch Mode 4 checks.

8.12.5. May be combined with the Radar Warning Receiver (RWR) systems program at the LGs option.

8.12.6. Will maintain testing data on hand for a minimum of 180 days.

8.12.7. Aircraft deploying outside of the continental United States (OCONUS) must successfully accomplish 100% IFF Mode IV reliability checks. Aircraft operating in OCONUS contingencies must follow theatre-specific guidance for conducting IFF Mode IV checks.

8.12.8. The following deviations are authorized:

8.12.8.1. OC-135 OPEN SKIES Aircraft are exempt from the above program when mission requirements exempt them from keying the Mode 4 and are not allowed to carry classified material while performing open skies related training or operational missions.

8.12.8.2. For air defense alert: IFF Mode IV reliability checks must be accomplished immediately prior to the aircraft being "placed" on alert status. This satisfies the daily preflight requirement, eliminating unnecessary delays in aircraft launch.

8.12.8.3. Theatre specific guidance for units deployed to Curacao FOL supporting Coronet Nighthawk requires only the accomplishment of IFF Mode IV reliability checks immediately prior to departure from home station. The current threat in the SOUTHCOM AOR does not necessitate conducting IFF Mode IV reliability checks prior to each flight, while deployed, provided the aircraft still meet the minimum requirements outlined in above paragraph 8.12.3. (Seventy percent of the fleet monthly).

**8.13. Radar Warning Receiver (RWR) Testing.** Prior to base departure for OCONUS Missions, all deploying aircraft must perform and pass Radar Warning Receiver operational check out. When operating in contingency status, OCONUS Theater procedures for Radar Warning Receiver Testing must be followed.

**8.14. Red Ball Maintenance Procedures.** Red Ball Maintenance is a concept intended to enhance troubleshooting, isolation, and repair of system malfunctions, by having qualified maintenance personnel available (in a truck or standby in the shop as determined by the LG) during aircraft launch, recovery and generation operations with the aircrew in the cockpit. (this includes when a specialist is immediately dispatched by MOC, expeditor, or Pro-super, to assist the crew in any discrepancy abnormal to the launch/recovery sequence) It is an intensified team effort to expeditiously repair aircraft discrepancies, and in no way authorizes personnel to take shortcuts or deviate from technical data and personnel safety requirements. The LG will ensure local procedures are established (when Red Ball Procedures are used) and written in a LOI to include (as applicable), but not limited to the following:

8.14.1. An appropriately configured vehicle may be available for the purpose of carrying tools and personnel used during flightline repair actions, and may be configured with an UHF radio and appropriate Land Mobile Radios (LMRs). It may also contain a forward supply point for appropriate Line Replaceable Units (LRUs).

8.14.2. Appropriate T.O.s and checklists will be available and strictly adhered to during all Red Ball Maintenance.

8.14.3. Foreign Object Damage (FOD) prevention will be emphasized with special attention to:

8.14.3.1. Loose articles, pens, caps, line badges, and tools.

8.14.3.2. Inlet and/or area inspection, as applicable, prior to start.

8.14.3.3. Tool and equipment accountability at conclusion of task.

8.14.3.4. The Red Ball Maintenance team should consist of an appropriate number of knowledgeable individuals who are trained and skilled in troubleshooting and system repair.

8.14.3.5. If aircraft engines are operating, a safety observer will maintain interphone communications, in full view of the flight crew, and positioned to maintain overall surveillance of the aircraft and personnel performing maintenance. Situational awareness of high-velocity air, moveable surfaces, high-pressure fluids, electrical shock, and other specific system hazards, must be stressed to ensure personnel and equipment safety.

8.14.4. Weapons loaded aircraft will be safed in accordance with applicable MDS and/or weapons specific technical data.

8.14.5. All maintenance actions will be properly annotated on the AFTO Forms 781A by the respective specialist. Personnel will ensure that all form entries are completed. Red X and in-process inspection entries will be cleared by a certified production inspector. An exceptional release will be re-accomplished by a certified individual upon completion of maintenance and before the aircraft is released for flight.

**8.15. Flexible/Rigid Borescope Inspection, Training and Certification Program.** This program requires all units with engines that have a T.O. requirement to specifically use a flexible/rigid borescope, to develop and maintain a comprehensive training program that ensures proper care of equipment, and proficiency is maintained.

8.15.1. Authorized Personnel. Only certified 5, 7, and 9 skill levels may perform flexible/rigid borescope inspections.

8.15.2. Training Requirements. Each unit must develop and conduct a training course, with a locally assigned course code. As a minimum, courses will include care and handling of the equipment, port location, all applicable tech data, engine fault isolation/damage assessment, contractor refresher training and demonstrated performance of an actual engine borescope. If available, the Contact Engineering Technical Service (CETS) or Roving reps will provide initial and refresher training.



8.15.3. **Certification Criteria.** Certifying officials will be the most qualified 7 or 9 level Aerospace Propulsion (2A6X1A/B), or Aircraft Maintenance (2A3X3X) AFSC (Aircraft Maintenance 2A5X1X and Helicopter Maintenance 2A5X2 if applicable) designated by the LG. Units will keep the number of certifiers and certified officials to an absolute minimum to assure standardized training and certification, and be trained initially by the CETS or Roving Reps. Certifying officials will maintain proficiency in the same manner as other personnel, certifying officials will recertify each other. Upon completion of the formal training, individuals are task-evaluated by the certifying official (an individual other than the instructor who administered the course), and placed on the SCR. Engine CETS and Roving Reps will train certifiers; however, the certifying officials must be certified by the LG. Certifying officials will then train and certify the remaining qualified personnel. Units that do not have practical access to CETS or Roving Reps, the unit certifier will complete the local training course and be appointed by the LG, based on their technical expertise, knowledge, and experience on the engine.

8.15.4. **Documentation.** After completing training, the instructor signs off the individual's AF Form 623. Upon certification, personnel are placed and tracked on the SCR. The 120-day proficiency will be tracked through CAMS or a locally developed method by the work center supervisor or designated representative.

8.15.5. **Proficiency Requirements.** Applies only when flexible/rigid borescope inspections are required on a recurring basis by T.O. directives. Does not apply to engines that are borescope inspected by exception (i.e. suspected FOD, engine troubleshooting). As a minimum, personnel must perform one borescope inspection every 120 days to maintain proficiency. Work Center supervisors ensure personnel who do not meet this requirement are decertified.

8.15.6. **Annual Recertification.** Each borescope-qualified person is required to be recertified every year by a certifying official. This is accomplished by reaccomplishing the initial certification criteria

**8.16. KC-135 Single Integrated Operations Plan (SIOP).** If KC-135 units have a requirement for SIOP duties, they will establish a written plan or LOI outlining as a minimum:

8.16.1. Crew Chief qualifications.

8.16.2. Minimum "alert bag" contents.

**8.17. F-16/F-15/B-1 Aircraft Intake Inspections.** An engine intake inspection is required between all sorties. If this can not be accomplished while aircraft are off station, and no qualified personnel are available to perform the inspection, the aircrew will document in the AFTO Form 781A, on a Red Dash, that the Preflight, Post Flight, or Thru Flight inspection is overdue, and the reason for non-accomplishment (no tech data, no qualified personnel, etc). The LG will determine in an LOI if intake inspections are required after each engine operation (i.e. taxi, INS alignment, sortie cancellation, abort, etc.) Each unit will develop and conduct a training course to include as a minimum:

8.17.1. Locally assigned course code.

8.17.1.1. Hands on inlet and engine inspection training.

8.17.1.2. Use of T.O.s and tools.

8.17.1.3. -6 T.O. familiarization and task identification.

8.17.1.4. Training should be conducted on an uninstalled engine to better familiarize each student with engine forward section components.

8.17.2. Certification.

8.17.2.1. Only certified 5, 7 or 9 level personnel may perform intake inspections.

8.17.2.2. Certifying officials will be a 7 or 9 level from aircraft maintenance AFSCs.

8.17.2.3. Only the units' most qualified individuals will be used as certifying officials.

8.17.2.4. The LG will certify the certifying officials.

8.17.2.5. Certifying officials will be kept to a minimum as determined by the LG.

8.17.2.6. Certifying officials will train and certify the remaining personnel.

8.17.2.7. Recertification of the certifying official and qualified personnel will be accomplished annually by accomplishing the initial certification criteria.

8.17.3. Documentation. Ensure the individuals training records are signed off and tracked on a special certification roster.

8.17.4. Evaluations. Each unit will establish QA evaluation procedures and frequencies to include a combination of personal and compliance inspections.

#### **8.18. Engine Fan/Compressor Blade Blending Certification Program.**

8.18.1. This section is intended to provide procedures to establish an engine fan/compressor blade blending certification program for any unit that blends blades.

8.18.1.1. 5, 7, or 9. level personnel with AFSC 2A6X1A (propulsion) may perform engine fan/compressor blade blending.

8.18.1.2. At the discretion of the unit LG commander, aircraft maintenance specialists 2A3X3A/B may perform blade blending.

8.18.2. Training and certification requirements:

8.18.2.1. Each unit will select their most qualified and experienced 7 or 9 level personnel to serve as certifiers.

8.18.2.2. In-depth training for certifying officials will be provided by unit Contractor Engineering Technical Services (CETS) or Roving Representatives.

8.18.2.3. Certifying officials should be kept to a minimum.

8.18.2.4. After receiving training by CETS/Roving Representatives and having performed a blade blending demonstration, certifying officials must be certified by the LG commander.

8.18.2.5. Certifiers will train and certify remaining personnel. Certification will be entered on the Special Certification Roster (SCR).

8.18.2.6. Personnel who become decertified must receive initial training and exhibit proficiency before being placed back on the SCR.

8.18.3. Proficiency Requirements:

8.18.3.1. Personnel must perform blade blending tasks at least every 180 days.

8.18.3.2. Individuals that do not meet proficiency requirements will be decertified.

8.18.4. Documentation. Each unit must establish and maintain a record of training and certification/recertification in Core Automated Maintenance System (CAMS).

8.18.5. Annual Recertification. Each qualified technician is required to be recertified annually by a certifying official by demonstrating to the certifying official they can perform the task.

**8.19. Forward Operating Location (FOL), Fort Drum, NY.** The mission of this unit is to provide effective combat readiness training to all Northeast fighter units for all aspects of maintenance, support, and aircrew combat training pertaining to live ordinance training. Additionally the FOL produces sorties for Northeast fighter units without the need for the using unit to deploy their personnel. FOL personnel will perform thruflight, launch, recovery, minor repair, and service of deployed aircraft, on/off equipment maintenance and support equipment maintenance within the capability of assigned personnel, equipment, and facilities. Personnel will also be tasked to load specific munitions items once designated by Detachment Commander (DETCO). Cross utilization training is used exclusively by the detachment as prescribed in paragraph 1.5 of this instruction.

8.19.1. Maintenance Organization. Maintenance Management latitude is given to the Production Superintendent (Pro Super). Detachment manning based on assigned equipment, scheduled sorties, and available facilities at the detachment. Unit's schedule sorties through the Pro Super that are within the capabilities of assigned personnel. The Pro Super will manage, schedule, plan, control, and direct the use of all maintenance resources and be responsible for the following:

8.19.1.1. Ensure a quality assessment program is developed.

8.19.1.2. Control the assignment and use of maintenance personnel. Ensure all work shifts are adequately manned.

8.19.1.3. Coordinate with the range facility on the monthly schedule of aircraft that will utilize the FOL.

8.19.1.4. Control assignment and use of facilities and equipment at the detachment.

- 8.19.1.5. Administer the detachment Safety program.
- 8.19.1.6. Ensure supply management procedures are accomplished.
- 8.19.1.7. Monitor the detachment Load Crew Training program.
- 8.19.1.8. Establish an Oil Analysis Program.
- 8.19.1.9. Establish a Maintenance Training Program.
- 8.19.1.10. Manage the detachment Financial Management program.
- 8.19.1.11. Monitor and coordinate requirements to support the maintenance mission and include the plans, programs, and host-tenant agreements.
- 8.19.1.12. Control the Hot Refueling program.
- 8.19.1.13. Provide liaison between the detachment, deploying unit LG personnel, and Fort Drum personnel. Provide support in nationally recognized Global Exercises with all flying units and support units that are deployed to Fort Drum.
- 8.19.1.14. Develop and administer a FOD program for the detachment.
- 8.19.1.15. Develop a PMEL and calibration of necessary equipment.
- 8.19.1.16. Work in conjunction with Detachment Commander to ensure maintenance activities are within the means of assigned personnel.
- 8.19.1.17. Ensure an effective CTK and Bench Stock System is utilized.
- 8.19.1.18. Assign vehicle control officers for assigned government vehicles at detachment.
- 8.19.1.19. Establish ADPE account for detachment. Ensure a LAN system is established with assigned unit for effective accountability of assigned equipment, CAS/B, and personnel and to ensure effective communications is established with host unit and ANGRC.
- 8.19.1.20. Develop and publish necessary OIs.
- 8.19.1.21. Develop a program for accountability of all munitions and fuels that are utilized at the attachment. Units utilizing the FOL for live ordnance training must coordinate with detachment personnel for all flying activities.
- 8.19.2. The detachment commander will authorize production inspectors.

**8.20. Dropped Object Reporting.** ANG unit safety offices will coordinate with the unit LG to ensure maintenance personnel notify the safety office of dropped object incidents and help with part number identification and associated costs. Air National Guard Safety (ANG/DOS) will maintain a database on aircraft dropped objects. Reports will be submitted via the Internet at <https://airguard.ang.af.mil/se/droppedobjects> as soon as all the requested information is collected. ANG unit safety offices are responsible for submitting ANG Dropped Object reports. Reporting information will be sent to the ANG safety office of the unit that owns the aircraft. For loaned aircraft, the reporting information will be sent to the ANG safety office of the unit with operational control of the aircraft at the time of the incident. While ANG crews are operating active duty or reserve aircraft, no ANG safety Dropped Object report is required. This requirement is for safety trend and tracking information only, and is in addition to the dropped object operational reports required in AFMAN 10-206 and AFMAN 10-206/ANG Sup 1.

**8.21. Maintenance of Assigned Ground Training Aircraft.** Maintenance of assigned ground training aircraft requires close supervision and management. All personnel associated with maintaining unit assigned trainers must be familiar with and enforce established procedures. The LG will:

- 8.21.1. Establish written minimum operational systems guidelines and general maintenance requirements for training aircraft to include as a minimum:
  - 8.21.1.1. 180 day wash interval and paint interval as required.
  - 8.21.1.2. Annual aircraft lube.
  - 8.21.1.3. Annual condition and corrosion inspection.
  - 8.21.1.4. Monthly strut and tire inspection to include tire roll over checks.
  - 8.21.1.5. Removal of explosive items.
  - 8.21.1.6. Fuel system will be drained and purged if not used for training.

8.21.1.7. Enter a Red X in the AFTO Forms stating "Non-flyable aircraft assigned as a permanent ground trainer".

8.21.2. Authorize cannibalization actions. Ensure cannibalized parts have completed a historical review to ensure all applicable TCTOs/modifications have been complied with.

8.21.3. Ensure Quality Assurance performs an MPE on ground trainers semi-annually. Inspection will include, as a minimum, AFTO Form 781 series review, a walk around and thruflight inspection.

8.21.4. Assign each training aircraft a designated crew chief. The designated crew chief will:

8.21.4.1. Ensure their aircraft has a current set of AFTO series 781 Forms maintained IAW T.O.s 00-20-1 and -5.

8.21.4.2. Perform and document a thorough forms review quarterly.

8.21.4.3. Ensure their aircraft is scheduled for and undergoes preventive maintenance requirements established by the LG.

8.21.4.4. Monitor the status of removed parts and parts on order.

8.21.4.5. Maintain required -21 equipment.

8.21.5. Ensure personnel who are training or doing maintenance on ground training aircraft will accomplish and document their actions IAW applicable technical data.

**8.22. Torque Wrench Calibration Site.** Units listed in T.O. 00-20-14 and approved by the Air Force Metrology and Calibration (AFMETCAL) Det 1 as a Limited User/Owner Torque Calibration/Repair Capability will ensure torque devices are calibrated per any applicable Calibration and Measurement Summary (CMS) or T.O. 33K-1-100-1/2.

8.22.1. Only approved Torque Calibration Standards or equivalent equipment meeting accuracy requirements as per calibration procedures will be used to certify torque devices. Torque Calibration Standards must be calibrated by an AFMETCAL program PMEL.

8.22.2. Only torque devices owned by the organization will be calibrated on this site. Torque devices beyond the capability of the organization to calibrate, will be sent to the Unit's supporting PMEL and will be included as part of their PMEL TMDE inventory.

8.22.3. Ensure all personnel performing torque calibrations have been properly trained. At a minimum, an individual must have had training either by possessing a 2P0X1 AFSC, have attended Torque Wrench Calibration Course # E2RST2P031 002 or have successfully participated in an On-the-Job training program provided by a technician with the above qualifications.

8.22.4. Maintain a Certification Roster of all qualified personnel performing torque calibrations.

8.22.5. Ensure there is a capability (Chart Recorder) to monitor and record the environment in the calibration area. The environment must be maintained at a temperature of 73°F ± 9°F with Relative Humidity between 15 and 70% RH during the 24 hour period from the time torque devices are introduced into the calibration area until the calibration procedure is completed. Environmental records must be kept on file for a **minimum of 6 months**.

8.22.6. Ensure a complete inventory of all torque devices calibrated at unit level is maintained current, and it is made available on request by AFMETCAL Det 1. This inventory should be kept in an automated format to facility scheduling and data collection.

8.22.7. The Torque Calibration Site supervisor will develop an internal Quality Program (QP) specifically tailored to the torque calibration function. At a minimum, establish a process to randomly select 3% of the scheduled monthly calibrations (but not less than two (2) certified torque devices per month) for a Quality Review (QR) and every six months accomplish a Process Review (PR) on each qualified technician. The QR is an internal inspection where a separate qualified technician re-accomplishes the calibration on a recently certified torque device prior to it leaving the calibration area and returning it to the customer. The PR is an internal review where a separate qualified technician observes the overall process in action; including training/qualifications, documentation, calibration standard status, and technical data. The supervisor will manage the internal Quality Program and maintain a log/record of all QRs/PRs. Supervision shall initial or sign the log/record when findings result in failure and initiate corrective action as necessary.

8.22.8. Provide maintenance data collection (MDC), if requested, in a format determined by AFMETCAL Det 1.

8.22.9. Participate in AFMETCAL Det 1's Proficiency Testing. Testing will consist of performing measurements on an artifact provided by the Air Force Primary Standards Laboratory (AFPSL) by applying the same calibration methods used to calibrate their own torque devices. Frequency of proficiency testing at each site will be determined at the discretion of AFMETCAL Det 1 (from zero (0) to two (2) times annually). AFMETCAL Det 1 will notify the units in advance and will provide specific instructions as to how to conduct the testing, report results and shipping of the artifact.

8.22.10. Torque Calibration Sites will be subject to random evaluations by AFMETCAL Det 1.

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## Chapter 9

### SAFETY

**9.1. Hazards.** All managers and supervisors must work to institutionalize Operational Risk Management (ORM) within the workplace. Identify, eliminate or control, and document hazards to minimize risk associated with uncertainty in the decision-making process. Additional guidance can be found in AFI 91-213, **Operational Risk Management Program**, and AFPAM 91-215, *Operational Risk Management Guidelines and Tools*. Managers and supervisors at all levels must recognize the sources of hazards and apply appropriate safety practices to avoid injuries to personnel and damage to equipment by following established procedures and directives, asking for help when needed, and using the appropriate personnel protective equipment (PPE). Control potential physical, fire, and health hazards by proper training prior to job accomplishment, appropriate work procedures, and supervisory controls.

**9.2. Hazard Abatement Program.** Implement and follow the Air Force Hazard Abatement Program to protect all Air Force personnel from work-related deaths, injuries, and occupational illnesses. Under this program, personnel identify potential hazards within the work environment. After hazards have been identified, determine the adequacy of current directives and procedures, provide appropriate training to affected personnel, and provide a method to track and control the training and hazard correction/abatement processes. Document safety plans, actions, hazards, and personnel training with the following forms (use computerized forms when available):

9.2.1. AF Form 3, **Hazard Abatement Plan**, AFI 91-301, *Air Force Occupational Safety, Fire Prevention and Health Program*.

9.2.2. AF Form 55, **Employee Safety and Health Record**, AFI 91-301.

9.2.3. AF Form 457, **USAF Hazard Report**, AFI 91-202, *The US Air Force Mishap Prevention Program*.

9.2.4. AF Form 1118, **Notice of Hazard**, AFI 91-301.

**Table 9.1. AFOSH Standards**

AFOSH Standard	Publication Title
48-8	Controlling Exposures to Hazardous Materials
48-19	Hazardous Noise Program
48-137	Respiratory Protection Program
91-5	Welding, Cutting and Brazing
91-25	Confined Spaces
91-31	Personal Protective Equipment
91-38	Hydrocarbon Fuels General
91-46	Materials Handling and Storage Equipment
91-50	Communications Cable, Antenna and Communications – Electronic (C-E) Systems
91-66	General Industrial Operations
91-90	Precision Measurement Equipment Laboratory (PMEL)
91-100	Aircraft Flightline Ground Operations and Activities
91-110	Nondestructive Inspection and Oil Analysis Program
91-119	Process Safety Management (PSM) of Highly Hazardous Chemicals
91-12	Machinery
91-22	Walking Surfaces, Guarding Floor and Wall Openings and Holes, Fixed Industrial Stairs, and Portable and Fixed Ladders
91-32	Emergency Shower and Eyewash Units
91-43	Flammable and Combustible Liquids
91-44	Safety Color Coding, Labeling, and Marking For Piping Systems
91-45	Hazardous Energy Control and Mishap Prevention Signs and Tags
91-56	Fire Protection and Prevention
91-67	Liquid Nitrogen and Oxygen Safety
91-68	Chemical Safety
161-2	Industrial Ventilation
161-9	Exposure to Radio Frequency Radiation
161-17	Standardized Occupational Health Program
161-20	Hearing Conservation Program
161-21	Hazard Communication

**Table 9.2. Air Force Regulations, Instructions and Technical Orders.**

Reference	Publication Title
AFI 11-218	Aircraft Operation and Movement On The Ground
AFI 21-105	Qualification of Welders
AFI 21-112	Aircraft Egress and Escape Systems
AFMAN 24-306	Manual For Wheeled Vehicle Driver
AFI 91-201	Explosive Safety Standards
AFI 91-202	The US Air Force Mishap Prevention Program
AFI 91-204	Safety Investigations and Reports
AFI 91-301	Air Force Occupational And Environmental Safety, Fire Protection, And Health (AFOSH) Program
T. O. 00-110A-Series	Inspection Maintenance Instruction, Storage, and Disposition of Aircraft
T.O. 00-20B-5	USAF Motor Vehicle and Equipment
T.O. 00-25-172	Ground Servicing of Aircraft and Static Grounding and Bonding
T.O. 00-25-223	Integrated Pressure Systems and Components (Portable and Installed)
T.O. 00-105E-9	Aircraft Emergency Rescue Information (Fire Protection)
T.O. 1-1-3	Inspection and Repair of Aircraft Integral Tanks and Fuel Cells
T.O. 1-1A-15	General Maintenance Instructions For Support Equipment
T.O. 1-1-691	Aircraft Weapons Systems Cleaning and Corrosion Control
T.O. 11A-1-33	Handling and Maintenance of Explosive Loaded Aircraft
T.O. 32-1-2	Use of Hand Tools (International Business Mechanical)
T.O. 32-1-101	Use and Care of Hand Tools and Measuring Tools
T.O. 33B1-1	Nondestructive Inspection Methods
T.O. 34Y1-1-171	Installation, Operation, Maintenance and Inspection of Air Compressors
T.O. 35-1-3	Corrosion Prevention, Painting and Marking USAF Equipment
T.O. 36-1-58	General Requirement For Repair, Maintenance and Testing of Lifting Devices
T.O. 38-1-23	Inspection and Installation of Spark Arrestors and Exhaust Purifiers On Non-aircraft
T.O. 4T-1-3	Tires and Tubes
T.O. 42A-1-1	Safety, Fire Precaution, and Health Promotion Aspects of Painting, Doping and Paint Removal
T.O. 42B-5-1-2	Gas Cylinder (Storage Type) Use, Handling and Maintenance

**9.3. Safety Inspections.** Accomplish hazard assessment and identification through the application of occupational safety, fire prevention, and health inspections, evaluations, and surveys. Perform self inspections to assess the safety environment of the unit. Most AFOSH Standards contain sample checklists for unit self inspections. In addition, use locally developed checklists tailored to specific unit requirements. Wing or base-level inspectors conduct unit inspections, evaluations, and surveys according to AFI 91-301. Use Occupational Safety and Health Act (OSHA) inspections for workplaces with civilian personnel. See AFI 91-301. OSHA inspections of Air Force contractor operations within the 50 states and US territories are authorized. These operations are subject to the enforcement authority of federal and state safety and health officials.

**9.4. General Safety Guidance.**

9.4.1. Use the general work center safety guidance in AFOSH Std 91-66, *General Industrial Operations*, and AFOSH Std 91-100, *Aircraft Flightline Ground Operations and Activities*. Follow AFOSH Std 91-66 for safe practices in operation and maintenance of base facilities; such as, buildings and grounds, general housekeeping, ladders, office safety practices, emergency eyewash and showers, and finger-ring policies. It also addresses safety precautions for electrical facilities and electronic equipment; such as, electrical emergency equipment, protective equipment, first aid training, clothing and jewelry.

9.4.2. Use AFOSH Std 91-100 for guidance pertaining to fire prevention, Cardiopulmonary Resuscitation (CPR), wearing apparel, reflective materials, finger rings and jewelry, maintenance stands, lifting devices, and powered Aerospace Ground Equipment (AGE). It also contains guidance for aircraft hangar operations, tool safety, material handling, fall protection, housekeeping, and operation and maintenance of compressed air systems.

**9.5. Flightline Safety.** Adhere to aircraft flightline safety guidance in AFOSH Std 91-100; T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*; and equipment T.O.s. AFOSH Std 91-100 contains safety guidance for towing and taxiing aircraft, aircraft jacking operations, aircraft cleaning and decontamination, aircraft tire mounting and servicing operations, and flightline vehicle operations. T.O. 00-25-172 contains safety guidance for aircraft servicing operations (all gaseous and liquid servicing), aircraft grounding and bonding, concurrent servicing operations, and combat or contingency operations.

**9.6. Work Center Safety Guidance.** Follow aircraft repair shop safety guidance found in AFOSH Stds 91-66 and 91-100 and equipment T.O.s. AFOSH Std 91-66 contains safety guidance for particular repair shops; such as welding, parachute, paint, fiberglass repair, fabrication shops, etc. AFOSH Std 91-100 contains guidance for general shop principles, machine safeguarding and shop layout, housekeeping, aircraft painting and paint removal, battery equipment and charging operations.

**9.7. Munitions Safety Guidance.** Use munitions safety requirements found in AFI 91-201, *Explosive Safety Standards*; 11A-, 11P-, and 13A-series T.O.s (explosive and egress handling safety); AFI 21-112, *Aircraft Egress and Escape Systems*; and specific equipment T.O.s. AFI 91-201 contains safety topics, such as, explosive safety program elements, handling of aircraft, remotely piloted vehicles and drones containing explosives, fire protection, storage and compatibility standards, transportation, etc. The 11A-, 11P-, and 13A-series T.O.s deal with the specifics of handling and maintaining explosive items or components. AFI 21-112 pertains to the handling of egress and escape systems and personnel training, certification, and decertification.



**9.8. Flightline Driving.** Motor vehicles operating on the flightline present a clear and possible danger to aircraft, equipment, and ground personnel. Guard against carelessness, haste, and disregard of existing safety standards. These factors are primary sources of collisions and personnel injury. Follow the general safety requirements for flightline vehicle operations found in AFOSH Std 91-100 and AFJMAN 24-306, *Manual for the Wheeled Vehicle Driver*. Familiarize all personnel authorized to operate vehicles on the flightline with the aircraft marshaling signals found in AFI 11-218, *Aircraft Operation and Movement on the Ground*.

**9.9. AFOSH Guidance.** Use AFOSH Standards if federal standards either do not exist, or do not adequately cover a function, for more stringent criteria, or if consolidation of information is beneficial for use in the workplace. Use Air Force functional directives and technical data instead of AFOSH Standards if they contain adequate guidance. See Table 9.1 for AFOSH Standards applicable to aircraft maintenance activities.

**9.10. Lockout and Tagout Concept.** Use procedures to isolate machinery or equipment from all potentially hazardous energy. Machinery or equipment is locked out or tagged out before qualified personnel perform any servicing or maintenance when the unexpected energizing, startup, or release of stored energy could cause injury. Instruct all personnel in the safety significance of lockout or tagout procedures. Find complete guidance for instituting an effective program in AFOSH Std 91-45, *Hazardous Energy Control and Mishap Prevention Signs and Tags*.

9.10.1. **Warning Tags.** For on-equipment aircraft maintenance, use the AF Form 1492, **Warning Tag**, to “flag,” a condition that could cause damage or injury if ignored. The tag is designed to preclude the inadvertent activation of a system, which should not be activated.

9.10.1.1. Use the perforated bottom portion of the tag to provide a “cross-check” with the aircraft forms.

9.10.1.2. Insert this portion of the tag through the aircraft forms binder ring, aligned with its corresponding entry. Each warning tag must match an existing AFTO Form 781A entry.

9.10.1.3. Logs are not required for tracking warning tag use.

9.10.1.4. Authority for removing the tag and signing off the condition requires no special certification.

9.10.1.5. Units should establish local procedures defining lockout and tagout requirements.

9.10.2. Do not use the AF Form 979, **Danger Tag**, for on-equipment aircraft maintenance.

**9.11. Safety Equipment.** Protect workers from hazards by first eliminating exposure to the hazard. If this is not possible, supervisors provide appropriate safety equipment and training in its use to their personnel.

**9.12. Foreign Object Damage (FOD):**

9.12.1. FOD prevention is the responsibility of all personnel. Units establish and implement procedures to prevent FOD. Supervisors brief all maintenance, operations, and base support personnel who work in, around, or drive through operational areas. Address common causes of FOD; local shop, flightline, and hangar work policies; hardware and tool control policies; and individual responsibilities to prevent FOD. Eliminate potential sources of FOD, including poor housekeeping and poor work habits. The following practices will help prevent FOD:

9.12.1.1. Perform operations and maintenance tasks according to technical data.

9.12.1.2. Practice good housekeeping at all times in all areas.

9.12.1.3. Account for all tools, equipment, and hardware at the end of each task. LG/OG will control personal issue items; such as, minimag lights, flashlights, leathermans, and buck knives for use on the flightline, IAW the units CTK and or Wing FOD program.

9.12.1.4. Use X-ray, borescope, and other state-of-the-art equipment to locate a foreign object in an inaccessible area.

9.12.1.5. Use vacuum or magnetic sweepers or sweep by hand, including personnel sweeps or FOD walks, to remove foreign objects from ramps, runways, and access roads.

- 9.12.1.6. Avoid wearing loose clothing or other articles that could be drawn into an engine intake or otherwise prevent the normal operation of equipment or systems. Examples of such articles would include: hats, hair fasteners, wigs, hairpieces, earrings, badges with metal clips or metal grade insignia. Wear coveralls without pockets or buttons when physical entry is needed to inspect intake or exhaust areas of engines. (LG may exempt KC-135, C-130, C-141, and A-10 from this requirement). Chemical suits may be used during chemical warfare exercises when inspecting intake or exhaust areas of engines.
- 9.12.1.7. No personally purchased communications devices will be allowed on the flightline (cell phones, beepers etc).
- 9.12.2. FOD Investigation and Reporting. Units investigate each case of FOD to determine its cause. Report FOD mishaps according to AFI 91-204, *Investigating and Reporting US Air Force Mishaps*. If the unit determines the FOD is attributable to personnel error, include it in the FOD rate.
- 9.12.3. Unit Responsibilities. Establish these procedures to minimize the impact of FOD:
- 9.12.3.1. The LG/OG will establish a lost object program.
- 9.12.3.2. Analyze AFI 91-204 FOD data to identify areas that need additional management emphasis.
- 9.12.4. F-16/F-15/B-1 unit LGs will determine if intake inspections are required after each engine operation (i.e. taxi, INS alignment, sortie cancellation, abort, etc.). Document procedures in an LOI.

### **9.13. Use of Cordless tools and Mag lite type flashlights on JP-8 serviced aircraft.**

- 9.13.1. The use of cordless tools and Mag lite type flashlights (or other battery powered tools/flashlights not approved for use in a Class I, Division I, hazardous atmosphere) are authorized for use on JP-8 serviced aircraft as long as the following is adhered to. Interiors (flight deck, fuselage etc.) are not considered a classed environment regardless if the aircraft is hangared or not.
- 9.13.1.1. Cordless tools will not be used during fuel servicing.
- 9.13.1.2. Cordless tools/lites will not be used during fuel system/tank/cell maintenance, to include removal of any panels that provide access to fuel cells/tanks, or probes, and engine enclosures.
- 9.13.1.3. Cordless tools will not be used within 5 feet of a fuel vent.
- 9.13.1.4. Batteries will not be charged or changed in a Class I hazardous atmosphere.
- 9.13.1.5. Cordless tools will not be used in the vicinity of known or suspected fuel leaks.
- 9.13.1.6. Mag lite type flashlights may be used for all routine maintenance actions, to include fuel servicing, as long as they are not used within 1 foot of fuel vents and are 6 volts or less.
- 9.13.2. A JP-8 serviced aircraft is defined as an aircraft that has been consecutively serviced with JP-8 at least four times.
- 9.13.3. Local procedures will be written to ensure cordless tools/flashlights that are not approved for use in a Class I, Division I, hazardous atmosphere are not used on non JP-8 serviced aircraft, if required.

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## **Chapter 10**

### **COMBAT TURN OPERATIONS (CTO)**

**10.1. General.** Although the environment in which combat air forces may be committed varies drastically, one requirement is common to all situations the capability to turn combat aircraft rapidly, providing war fighting commanders with sufficient sorties to meet theater requirements. Combat Turnaround Operations (CTO) reflect theater wartime requirements and concepts of employment. The sortie generation process can best be described as a series of sortie cycles. Each cycle is made up of two basic components: flying and regeneration. Regeneration is comprised of recovery, repairing, servicing, and reloading.

**10.2. Terms.** The following general terms are defined

10.2.1. Recovery. The process of transitioning from flight to ground operations. The recovery process actually starts at the time the maintenance activity receives an aircraft status and expenditure report (“squawks”) from the aircrew. The Combat Turn Director (CTD) decides at that time whether to refuel/rearm for the next sortie, perform minor maintenance first, or take the aircraft off the next scheduled mission to perform more extensive maintenance.

10.2.2. Repairing. The actions taken to repair discrepancies. During the recovery portion, discrepancies are evaluated and a determination is made as to whether the aircraft can accomplish a subsequent mission. Repairs may be accomplished prior to the servicing and reloading or simultaneously. The (CTD) may elect to perform maintenance actions in the Combat Turn Area (CTA) or the hard broke area as the situation dictates. The decision on when repairs are to be made depends on the nature of the discrepancy, repair actions necessary, and type of CTO to be performed. Any repairs accomplished simultaneously with weapons loading will be coordinated with the weapons load crew chief.

10.2.3. Servicing/reloading. The process of refueling the aircraft and loading armament appropriate to the next mission. There is no set order to the servicing/reload process.

10.2.4. Aircraft Decontamination Area. An area used to decontaminate returning aircraft that may have been contaminated by radiological fallout or liquid chemical/biological warfare agent. The area should be easily accessible, but should limit exposure to spreading contamination to other areas.

10.2.5. Combat Turn. For Combat Turns, the aircraft is refueled and reloaded with the required munitions, but not at the same time. A combat turn can be accomplished before or after refueling. Weapons loading is accomplished using the aircraft specific 33-1-4CL or 33-1-2 (33-2-1 for B-1 units). If units utilize the 33-1-4CL procedures, refueling will be accomplished either prior to or after the weapons load portion of the Combat Turn. An Aircraft Turn Supervisor (ATS) is not required for a Combat Turn. Applicable Thrufight or Quick Turn workcards will be used for aircraft inspection during Combat Turn operations. **NOTE:** Combat Turn procedures are intended for contingency operations where the commander feels such procedures are necessary. They are not to be used simply to expedite the day to day flying schedule. Combat Turn training for contingency exercises and to prepare for tasked contingency operations and ORIs is authorized.

10.2.6. Combat turn area (CTA). An area designated and approved for maintenance, loading and servicing of aircraft for combat operations. The area may consist of Protective Hardened Aircraft Shelter(s) (PHAS), aircraft flow-through arches/revetments, or an open ramp, and may include a munitions holding area if properly sited IAW AFI 91-201. A CTA normally includes the operating area for one squadron of aircraft but may be divided into one or more operating areas.

10.2.7. Dual loading operation (DLO). A method for rapid munitions loading/unloading using two qualified load crews on a single aircraft. During DLOs, a qualified supervisor (ATS) must be assigned to each operation to de-conflict the two load crews. DLOs may only be accomplished if the following conditions are met.

10.2.7.1. Dual loading is required as determined by the local commander.

10.2.7.2. Both load crew chiefs utilize separate checklists. Though both crew chiefs must confirm completion of common pre- and post-load tasks, they do not both need to actually accomplish those tasks.

10.2.7.3. Load crews conduct independent loading operations with separate tool sets (trailers for bomber loads).

10.2.7.4. Postload power-on checks, (bomber only) are not accomplished until all munitions are loaded and connections are accomplished.

10.2.8. Flow-through arch/revetment. An area with arches/revetted walls where aircraft are recovered and launched during combat turnaround operations.

10.2.9. Hard broke area. An area designated for parking aircraft that require maintenance that will take longer than the turn-around time allowed. After maintenance is accomplished, the aircraft can be re-inserted into the CTO flow. If space permits, this area may be located within the CTA.

10.2.10. Integrated Combat Turns (ICT) (Fighters only). An ICT is a combination of Combat Turn Procedures using the aircraft specific 33-1-4CL procedure while simultaneously refueling the aircraft. ICTs significantly increase the risk to personnel and equipment and should only be used when the operational commander deems them to be absolutely essential. Prior to using ICTs, commanders must first determine combat turn procedures and DLOs will not be sufficient. During ICT operations, a qualified supervisor (ATS) will be assigned to each aircraft ICT. The ATS will be responsible for safety of the operation.

**10.3. Concept of Operations.** CTO, which may include Combat Turns, Integrated Combat Turns (ICT) (fighters only), or Dual Loading Operations (DLO), provides operational flexibility in managing resources and a rapid means of turning mission ready aircraft under emergency combat conditions. The effectiveness of a unit's CTO program is determined by the degree of support from commanders, supervisors, and support agencies involved. CTO procedures reflect and support theater deployment locations, wartime requirements, and concepts of employment. They impose a higher degree of risk and require additional personnel and resources to be readily available at designated locations. CTO are accomplished IAW applicable aircraft technical data procedures. Hot refueling and ICTs are approved by the system safety engineering analysis (SSEA) as defined in T.O. 00-25-172. **NOTE:** CTO procedures were designed and approved for operations conducted under combat conditions and will only be executed during actual combat/contingency conditions or combat/contingency training exercises and readiness inspections. CTOs will not be used to circumvent the maintenance requirements of other technical orders. The key to successful CTO is flexibility. A unit should be able to meet the required sortie tasking in their Documented Operating Capabilities (DOC) statement; however, the method of reaching that capability will vary with operating location, available equipment, and daily tasking.

**10.4. Key Personnel and Responsibilities.** The following key personnel may be required for CTO:

10.4.1. Combat Turn Director (CTD): CTDs are designated and qualified maintenance officers or senior NCOs with a maintenance related AFSC. The Squadron Maintenance Officer may elect to use a production superintendent as CTD. The CTD has overall responsibility for all maintenance personnel and resources dedicated to a CTA with complete authority to establish priorities, expend resources to ensure maximum sortie production and request assistance in resolving problems beyond the capability of assets dedicated to the CTA. The CTD, with the OLO, will immediately elevate problems that effect sortie generation to the appropriate levels of supervision. The CTD has overall responsibility for safety during the CTO. A unit may decide to utilize additional combat turn supervisors if necessary for continuity.

10.4.2. Combat Turn Supervisor (CTS): Manages part of the overall CTO. The decision to use a CTS should be based on the number of aircraft being turned and the size of the CTA. The CTD retains overall responsibility for the CTO. If used the CTS will be highly trained and qualified maintenance NCOs. Flightline expeditors may be used but will perform duties as assigned by the CTD.

10.4.3. Aircraft Turn Supervisor (ATS): ATSs are highly trained and qualified seven level (minimum) maintenance and maintenance related NCOs responsible for supervising ICT/DLO. The ATS will only supervise one operation at a time. The ATS will:

10.4.3.1. Supervise operations by using the appropriate -4CL or 33-2-1 tech data.

10.4.3.2. Ensure that the operation progresses safely and on schedule.

10.4.3.3. Terminate actions when hazards jeopardize the safety of personnel or equipment.

10.4.3.4. Maintain communication with the CTD/CTS.

10.4.3.5. Ensure sufficient serviceable material and equipment is available and properly positioned for the CTO.

10.4.3.6. Coordinate with the CTD/CTS for POL, equipment support/replacement, and the movement of munitions/fuel tanks into the CTA.

10.4.3.7. For DLOs, coordinate actions of both load crews.

10.4.4. Operations Liaison Officer: The OLO will advise the CTD on aircraft capability to perform missions and advise the CTD on all NMC aircraft. Additionally, the OLO will assist in resolving aircrew problems, fragmentary order requirements, and operations functions. If there are not sufficient operations personnel to perform OLO duties, the CTD will have a communications link to the operations supervisor.

10.4.5. Munitions Liaison Officer. A munitions officer or senior NCO designated to assist the unit mission planning cell.

**10.5. CTO Planning.** An effective CTO program requires planning and training well in advance of actual deployment for a contingency operation. Each deployable squadron will establish a basic CTO plan. This plan serves as a baseline for planning and training. Leadership must emphasize the ability to adapt the plan to any situation. To keep the plan unclassified, references may be made to other documents in lieu of including the actual classified information.

10.5.1. When constructing the CTO plan, consider the following.

10.5.1.1. Mission. What missions do the unit expect to fly when tasked? Are mission changes anticipated during a flying period? For instance, would a unit expect to fly both OCA and CAS during the same period, or perhaps change from CAS to OCA?

10.5.1.2. Sortie rate. Consider what sortie rates the squadron expects to fly. This should be based on the unit's DOC statement.

10.5.1.3. Expected Turn Time. Based on the sortie rate, determine the expected time each aircraft can be available between landing and subsequent launch.

10.5.1.4. Available personnel. What personnel, with what qualifications and experience, will be available to perform the CTO? Especially important are personnel in supervisory positions.

10.5.1.5. Anticipated equipment availability. What equipment, in what condition, will be available at possible deployed locations? Especially important is refueling equipment.

10.5.1.6. What CTO method best suits the above factors? Can combat turns accomplish the assigned mission and sortie rate? Will DLO be necessary or beneficial? Consider ICTs as a last resort.

10.5.2. Commanders must carefully evaluate the risk involved in performing CTO. A CTO involves many different operations occurring simultaneously under conditions of increased stress and with personnel who will experience increasing levels of fatigue as the operation continues. Several considerations must be evaluated prior to deciding what method will best meet the tasking.

10.5.2.1. How many people are available? What is their training/experience level? Will sustained operations be possible, or will a return to a slower pace be necessary as fatigue becomes more pronounced.

10.5.2.2. Does the area available for the CTO allow an acceptable margin of safety? What actions need to be taken to mitigate risks associated with less than optimal space?

10.5.2.3. What result would a mishap in one part of the CTO have on other parts? Understanding that the CTO is an inherently dangerous operation, does the plan mitigate those dangers as much as possible?

10.5.3. In order for CTO operations to effectively turn aircraft rapidly, all involved personnel must know precisely what is expected of them. This means they must have a thorough understanding of all aspects of the basic CTO plan. The squadron maintenance officer or senior maintenance representative, upon implementation, should convert the basic plan into an operational direction. This does not have to be written in the form of a formal plan or instruction but must be clearly understood by all personnel involved.

10.5.4. Communications is essential to a smooth flow of aircraft through a CTO. The CTD must have constant, reliable communications ability with the MOC, Munitions Control, and flightline expeditors. Additionally, the CTD and OLO must be able to communicate with operations planners and supervisors. It is this type of communication that will allow quick, accurate decision making and faster, more orderly flow of aircraft.

10.5.5. Pre-positioning of people and equipment is critical to a successful operation. Locate de-arm, maintenance, servicing, loading, and arming areas in an orderly flow as much as possible. The CTD has complete control of the actual CTO and should have the most input into the layout of the CTO area. The CTO area should be separated from other maintenance areas as much as available space permits. Pre-positioning fuel servicing equipment/personnel is one of the most critical actions to ensure successful CTO. Whether a hot pit arrangement is available or trucks are used, the capability to service fuel should be in place prior to aircraft recovery. The most efficient use of limited fueling assets is to establish a central fueling location as part of the CTO flow and move aircraft to the fuel either prior to or after weapons loading. When considering the location for a CTA, also consider alternate areas that could be used in case the primary CTA is disabled.

10.5.6. Pilots may be used during CTO to perform fireguard or similar tasks. It is important to note that pilots may have brief/debrief requirements between sorties and so should not be relied on as part of the available CTO manning, but should participate in CTO training when available.

10.5.7. Manpower available to regenerate aircraft may also be increased during CTO. First, cross utilization of skilled personnel may be employed to ensure maximum productivity. Second, direct sortie production functions may be augmented. If required, programs will be developed to identify, train, and qualify augmentees. Augmentee availability at deployed bases must be considered by deploying units. Finally, indirect support such as meals, transportation, and sanitation should be provided to the maximum extent possible at the aircraft generation locations. Augmentees for aircraft or flightline operations or functions will have required safety/explosive safety training for all applicable tasks or functions they are to perform.

10.5.8. To optimize munitions support, the number of aircraft munitions configurations will be minimized and standardized as much as possible. Munitions will be pre-assembled to the greatest extent possible. Configuration changes may be performed during CTO and training/exercises providing the applicable functional checks are performed to ensure the safety and reliability of the weapons system. Armament system configuration changes will be limited to the restrictions listed in the applicable aircraft T.O.

10.5.9. Munitions support functions will be managed to support surge efforts IAW AFI 21-201. At the appropriate alert warning, predetermined loads will be assembled, preloaded as applicable, and delivered to the CTO or holding area. The munitions controlling agency, through the Munitions Liaison Officer, will monitor the projected need for complete round munitions.

10.5.10. Repair cycle items determined to be mission essential, and best accommodate the CTO concept, may be pre-positioned at supply points in the maintenance and CTO area. Total available assets, to include the readiness spares kit (RSP) spares, may be utilized to fill pre-positioned authorizations.

## **10.6. CTO Support.**

10.6.1. If supply points are used, they will be operated in accordance with the provisions of AFMAN 23-110, Vol 2, Part 2, Chapter 24. Issues from these supply points will be immediately called into the supply function who will initiate immediate replacement action with an appropriate delivery priority.

10.6.2. Direct mission support activities will be augmented as necessary for combat sortie generation. Personnel identified as augmentees will be trained for cross utilization.

10.6.3. Maintenance workcenter supervisors will ensure expeditious movement of reparable assets through the repair cycle.

## **10.7. Training Requirements.**

10.7.1. The Squadron Maintenance Officer will ensure all assigned weapons load crews are qualified and proficient in CTOs IAW Chapter 7 and the applicable aircraft 33-1-4/33-1-2 (33-2-1 for B-1) load procedures.

10.7.2. Aircraft maintenance personnel must receive semi-annual training on CTO concepts and the squadron's CTO plan. Knowledge of the plan is the primary means of preventing mishaps. Supervisors will receive semi-annual training on the CTO plan, their part in it, and hazard/safety considerations. All supervisors must precisely understand their responsibility for the safety of CTO personnel.

10.7.3. The Wing Weapons Manager will ensure the Load Standardization Crew, at least 2 APG trainers, and if needed the Standardization Lead Crew are Combat Turn qualified and that the LSC has a training system in place to qualify wing load crews in Combat Turn procedures. Additionally, if DLO is part of the wing's CTO plan, the LSC will have a program to train and qualify weapons load crew chiefs. This qualification program may be classroom training but load crew chiefs must supervise their crews during an actual DLO before receiving qualification. Quarterly DLO are required to maintain qualifications.

10.7.4. Combat Turn or ICT procedures may be used for quarterly evaluations of weapons load crews but not for initial qualification/certification.

10.7.5. In units that elect to maintain an ICT capability, SMOs will establish a coordinated training plan that includes weapons load crews, other maintenance personnel, and fuel specialists. In these units, the WWM will ensure the LSC is fully certified to perform ICTs. SMOs will ensure they have sufficient ICT personnel and load crews certified to meet the CTO plan.

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**OFFICIAL**

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**Attachment**  
**Glossary of References and Supporting**  
**Informaation**

## Attachment

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

**References:**

ACC Form 240	Integrated Combat Turnaround Evaluation
AF Form 3	Hazard Abatement Plan
AF Form 37-138	Disposition of Air Force Documentation -- Policies, Procedures, and Responsibilities
AF Form 55	Employee Safety and Health Record
AF Form 457	USAF Hazard Report
AF Form 601	Equipment Action Request
AF Form 623	On-the-Job Training Record
AF Form 664	Aircraft Fuels Documentation Log
AF Form 714	Customer Complaint Record
AF Form 797	Job Qualification Standard Continuation/Command JQS
AF Form 979	Danger Tag
AF Form 1067	Modification Proposal
AF Form 1098	Special Task Certification and Recurring Training
AF Form 1118	Notice of Hazard
AF Form 1297	Temporary Issue Receipt
AF Form 1492	Warning Tag
AF Form 1996	Special Adjusted Stock Levels
AF Form 2001	Notification of TCTO Kit Requirements
AF Form 2005	Issue/Turn-in Request
AF Form 2400	Functional Check Flight Log
AF Form 2407	Weekly/Daily Flying Schedule Coordination Sheet
AF Form 2408	Generation Maintenance Plan
AF Form 2409	Generation Sequence Action Schedule
AF Form 2410	Inspection/TCTO Planning Checklist
AF Form 2419	Routing and Review of Quality Control Reports, Version 2
AF Form 2413	Supply Control Log
AF Form 2422	Maintenance Analysis Referral
AF Form 2434	Munitions Configuration and Expenditure Document
AF Form 2435	Load Training and Certification Document
AF Form 2519	All Purpose Checklist
AF Form 3525	CCB Modification Requirements and Approval Document
AFI 10-403	Deployment Planning
AFI 10-601	Mission Needs and Operational Requirements Guidance and Procedures
AFI 11-206	General Flight Rules
AFI 11-218	Aircraft Operation and Movement on the Ground
AFI 11-401	Flight Management
AFI 13-201	Air Force Airspace Management
AFI 21-101	Maintenance Management of Aircraft
AFI 21-103	Equipment Inventory, Status and Utilization Reporting
AFI 21-104	Selective Management of Selected Gas Turbine Engines
AFI 21-112	Aircraft Egress and Escape Systems
AFI 21-201	Inspection, Storage, and Maintenance of Non-Nuclear Munitions
AFI 21-202	Combat Ammunition System Procedures
AFI 21-203	Deployable Ammunitions Operation Procedures
AFI 21-208	Munitions Forecast, Allocation, and Buy Budget Process



AFI 21-401	Engineering Data Storage, Distribution and Control
AFI 23-202	Buying Petroleum Products and Other Supplies and Services Off-Station
AFI 32-1065	Grounding Systems
AFI 32-4001	Disaster Preparedness Planning and Operations
AFI 33-360V1	Publications Management Program
AFI 37-122	Air Force Records Management Program
AFI 37-138	Records Disposition -- Procedures, and Responsibilities
AFI 63-104	THE SEEK EAGLE Program
AFI 91-103	Air Force Nuclear Safety Certification Program
AFI 91-201	Explosive Safety Standards
AFI 91-202	The U.S. Air Force Mishap Prevention Program
AFI 91-204	Investigating and Reporting US Air Force Mishaps
AFI 91-205	NonNuclear Munitions Safety Board
AFI 91-301	AF Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program
AFJMAN 24-306	Manual for the Wheeled Vehicle Driver
AFMAN 23-110	Standard Base Supply Customer's Procedures
AFMAN 23-220	Reports of Survey for Air Force Property
AFMAN 32-4004	Emergency Response Operations
AFMAN 91-201	Explosive Safety Standards
AFOSH Std 91-45	Hazardous Energy Control and Mishap Prevention Signs and Tags
AFOSH Std 91-66	General Industrial Operations
AFOSH Std 91-100	Aircraft Flightline Ground Operations and Activities
AFPD 21-1	Managing Aerospace Equipment Maintenance
AFPD 62-4	Civil Airworthiness Standards for Transport Aircraft
AFTO Form 15	Ammunition Serviceability and Location Record
AFTO Form 22	Technical Order System Publication Improvement Report and Reply
AFTO Form 95	Significant Historical Data
AFTO Form 97	Aerospace Vehicle Battle Damage Repair Debrief/Assessment Record
AFTO Form 97A	Aerospace Vehicle Battle Damage Repair Debrief/Assessment Record Continuation Sheet
AFTO Form 103	Aircraft/Missile Condition Data
AFTO Form 135	Source, Maintenance, and Recoverability Code Change Report
AFTO Form 223	Time Change Requirements Forecast
AFTO Form 350	Repairable Item Processing Tag
AFTO Form 781	AFORMS Aircrew/Mission Flight Data Document
AFTO Form 781A	Maintenance Discrepancy and Work Document
AFTO Form 781F	Aerospace Vehicle Flight Report and Maintenance Document
AFTO Form 781H	Aerospace Vehicle Flight Status and Maintenance
AFTO Form 2419	Routing and Review of Quality Control Reports
AFTO Form 2435	Load Training and Certification Document
ANGI 21-101	Maintenance Management of Aircraft
ANGMAN 21-103	Management Analysis Policy
ANGMAN 36-2201	Maintenance Training Policy
DD Form 1348-6	DOD Line Item Requisition Document
T.O. 00-5-1	Air Force Technical Order System
T.O. 00-5-2	Technical Order Distribution System
T.O. 00-5-2-2	Automated Technical Order Management System
T.O. 00-5-15	Time Compliance Technical Order System
T.O. 00-20-1	Aerospace Equipment Maintenance General Policies and Procedures

T.O. 00-20-3	Maintenance Processing of Reparable Property and Recycle Asset Control System
T.O. 00-20-4	Configuration Management Systems
T.O. 00-20-5	Aerospace Vehicle/Equipment Inspection and Documentation
T.O. 00-20-9	Forecasting Replacement Requirements for Selected Calendar and Hourly Time Change Items
T.O. 00-20-9-1	Forecasting Management Code AQ Items
T.O. 00-20-14	Air Force Metrology and Calibration Program
T.O. 00-25-4	Depot Maintenance
T.O. 00-25-172	Ground Servicing of Aircraft and Static Grounding and Bonding
T.O. 00-25-172CL-4	Aircraft Servicing with USAF R5, R9, R11 Servicing Vehicles
T.O. 00-35D-54USAF	Material Deficiency Reporting and Investigating System
T.O. 1-1-300	Acceptance/Functional Check Flights and Maintenance Operational Checks
T.O. 1-1B-50	Basic Technical Order for USAF Aircraft Weight and Balance
T.O. 1-1H-39	Aircraft Battle Damage Repair General Technical Manual
T.O. 11A-1-1	Conventional Munitions Restricted or Suspended
T.O. 21M-1-101	Reliability Asset Monitoring System
T.O. 32-1-101	Maintenance & Care of Hand Tools
T.O. 33K-1-100- CD-1	TMDE Calibration Notes, Maintenance Data Collection Codes, Calibration Measurement Summaries, Calibration Procedures, Calibration Interval, and Work Unit Code Reference Manual

### ***Abbreviations and Acronyms:***

<b>AATTC</b>	Advanced Airlift Tactical Training Center
<b>ABDR</b>	Aircraft Battle Damage Repair
<b>ACC</b>	Air Combat Command
<b>ACM</b>	Aircraft Configuration Management
<b>ACMR</b>	Aircraft Management Review
<b>ACNS</b>	Avionics Communication Navigation System
<b>ADP</b>	Automated Data Product
<b>ADPE</b>	Automated Data Processing Equipment
<b>ADR</b>	Aircraft Document Review
<b>ADS</b>	Automated Data Systems
<b>ADS</b>	Aircraft Defensive System
<b>AE</b>	Avionics Element
<b>AETC</b>	Air Education and Training Command
<b>AFCOMAC</b>	Air Force Combat Munitions Center
<b>AFCS</b>	Automatic Flight Control Systems
<b>AFMC</b>	Air Force Materiel Command
<b>AFOSH</b>	Air Force Occupational Safety and Health
<b>AFSC</b>	Air Force Specialty Code
<b>AGCS</b>	Avionics Guidance and Control Systems
<b>AGE</b>	Aerospace Ground Equipment
<b>AGM</b>	Air to Ground Missile
<b>AGMC</b>	Aerospace Guidance Metrology Center
<b>AGS</b>	Aircraft Generation Squadron
<b>AIM</b>	Air Intercept Missile

<b>AIMS</b>	<b>A</b> Air Traffic Control Radar Beacon System <b>I</b> (IFF) Identification Friend or Foe <b>M</b> Mark XII Systems <b>S</b> System
<b>AIS</b>	Avionics Intermediate Shop
<b>ALC</b>	Air Logistics Center
<b>AMC</b>	Air Mobility Command
<b>AME</b>	Alternate Mission Equipment
<b>ANG</b>	Air National Guard
<b>ANGRC</b>	Air National Guard Readiness Center
<b>APG</b>	Airplane General
<b>APINS</b>	Autopilot/Instrument
<b>AS</b>	Allowance Standard
<b>ASE</b>	Avionics Support Equipment
<b>ATD</b>	Aircrew training devices
<b>ATOMS</b>	Automated Technical Order Management System
<b>ATS</b>	Area Turn Supervisor
<b>ATS</b>	Automated Training Subsystem
<b>ATS</b>	Automated Test Stations
<b>AUR</b>	All Up Round
<b>AURC</b>	All-Up-Round-Container
<b>AVDO</b>	Aerospace Vehicle Distribution Officer
<b>AVTR</b>	Airborne Video Tape Recorder
<b>AWCIS</b>	Automatic Weapons Control and Intercept System
<b>AWM</b>	Awaiting Maintenance
<b>AWP</b>	Awaiting Parts
<b>BCE</b>	Base Civil Engineer
<b>BSP</b>	Base Support Plan
<b>CA/CRL</b>	Custodian Authorization and Custody Receipt Listing
<b>CAD</b>	Cartridge Actuated Device
<b>CAMS</b>	Core Automated Maintenance System
<b>CAS-B</b>	Combat Ammunition System-Base
<b>CAS-D</b>	Combat Ammunition System-Deployable
<b>CAST</b>	Combat Armament Support Teams
<b>CAVR</b>	Compact Airborne Video Recorder
<b>CCB</b>	Configuration Control Board
<b>CCLC</b>	Certified Combat Load Crew
<b>CDB</b>	Central Data Base
<b>CEM</b>	Chief Enlisted Manager
<b>CEMS</b>	Comprehensive Engine Management System
<b>CETS</b>	Contract Engineering Technical Service
<b>CFETP</b>	Career Field Education Training Plan
<b>CFL</b>	Competent Familiarity Loading
<b>CFT</b>	Contract Field Team
<b>CIIC</b>	Control Inventory Item Code
<b>CLS</b>	Contract Logistic Support
<b>CM</b>	Configuration Management
<b>CMS</b>	Calibration Measurement Summary
<b>CMT</b>	Combat Munitions Team
<b>CND</b>	Cannot Duplicate
<b>COS</b>	Chief of Supply
<b>CPR</b>	Cardiopulmonary Resuscitation
<b>CRF</b>	Component Repair Flight

<b>CRTC</b>	Combat Readiness Training Center
<b>CSAF</b>	Chief of Staff Air Force
<b>CSM</b>	Computer System Manager
<b>C&amp;SRL</b>	Compliance and Standards Requirements List
<b>CSS</b>	Combat Support Section
<b>CSSM</b>	Combat Supply Support for Maintenance
<b>CTD</b>	Combat Turn Director
<b>CTK</b>	Composite Tool Kit
<b>CTO</b>	Combat Turn Operations
<b>CUT</b>	Cross Utilization Training
<b>DAD</b>	Designated Alert Detachment
<b>DAS</b>	Defensive Avionics System
<b>DBM</b>	Database Manager
<b>DIFM</b>	Due-in From Maintenance
<b>DLO</b>	Dual Load Operations
<b>DLP</b>	Duel Loading Procedures
<b>DLR</b>	Depot Level Repairables
<b>DOI</b>	Date of Installation
<b>DOM</b>	Date of Manufacture
<b>DOR</b>	Due Out Release
<b>DO4</b>	Daily Document Register
<b>DREDS</b>	Deferred Requisitioning of Engineering Data
<b>DS</b>	Date System
<b>DRMO</b>	Defense Reutilization and Marketing Office
<b>ECM</b>	Electronic Counter Measure
<b>ECP</b>	Engineering Change Proposal
<b>EDMS</b>	Engineering Data Management System (Army)
<b>EDSC</b>	Engineering Data Service Center
<b>EMF</b>	Equipment Maintenance Flight
<b>ENMCS</b>	Engine Not Mission Capable Supply
<b>EOD</b>	Explosive Ordnance Disposal
<b>EOQ</b>	Economic Order Quality
<b>EOR</b>	End of Runway
<b>EPE</b>	Evaluator Proficiency Evaluation
<b>ETIC</b>	Expected time in commission
<b>EW</b>	Electronic Warfare
<b>EWO</b>	Emergency War Order
<b>EX</b>	Exercises
<b>FAA</b>	Federal Aviation Administration
<b>FAD</b>	Force Activity Designator
<b>FAF</b>	Federal Aviation Agency
<b>FAM</b>	Functional Account Management
<b>FCF</b>	Functional Check Flight
<b>FG</b>	Force Generation
<b>FLR</b>	Forward Looking Radar
<b>FMS</b>	Flight Management System
<b>FOD</b>	Foreign Object Damage
<b>FOM</b>	Facilitate Other Maintenance
<b>FSA</b>	File Server Administrator
<b>FSAS</b>	Fuel Savings Advisory System
<b>FSC</b>	Federal Stock Class

<b>FSG</b>	Federal Supply Group
<b>GCAS</b>	Ground Collision Avoidance System
<b>GCSAS</b>	Generic Configuration Status Accounting Subsystem
<b>GMAJCOM</b>	Gaining Major Command
<b>GOX</b>	Gaseous Oxygen
<b>GPS</b>	Global Positioning Systems
<b>GSAS</b>	Generation Sequence Action Schedule
<b>HQ</b>	Headquarters
<b>IAIS</b>	Improved Avionics Intermediate Shop
<b>IATS</b>	Intermediate Automated Test Station
<b>IAW</b>	In Accordance With
<b>ICT</b>	Integrated Combat Turnaround
<b>ID</b>	Identification
<b>IDAS</b>	Image Display and Access System
<b>IFC</b>	In-Flight Check
<b>IFF</b>	Identification Friend or Foe
<b>IG</b>	Inspector General
<b>ILS</b>	Instrument Landing System
<b>IMS</b>	Inertial Measurement System
<b>INS</b>	Inertial Navigation System
<b>IPI</b>	In-Process Inspection
<b>ISO</b>	Isochronal
<b>ISU</b>	Issue
<b>JCN</b>	Job Control Number
<b>JEDMICS</b>	Joint Engineering Data Management Information and Control System
<b>JOAP</b>	Joint Oil Analysis Program
<b>JSML</b>	Job Standard Master List
<b>JQA</b>	Job Qualification Standard
<b>JQS</b>	Job Quality Standard
<b>JST</b>	Job Standard
<b>KTL</b>	Key Task List
<b>LAN</b>	Local Area Network
<b>LANTIRN</b>	Low Altitude Night Terrain Infrared Navigation
<b>LG</b>	Logistics Group
<b>LM</b>	Limited use Munition
<b>LME</b>	Locally manufactured equipment
<b>LMR</b>	Land Mobile Radio
<b>LOI</b>	Logistics Operating Instruction
<b>LORAN</b>	Long Range Aids to Navigation
<b>LOX</b>	Liquid Oxygen
<b>LRU</b>	Line Replaceable Unit
<b>LSC</b>	Loading Standardization Crew
<b>LSF</b>	Logistics Support Flight
<b>LV</b>	Leave
<b>MAC</b>	Munitions Assembly Conveyor
<b>MADARS</b>	Malfunction Detection Analysis and Recording Systems
<b>MAJCOM</b>	Major Command
<b>MAQ</b>	Minimum Authorized Quantity
<b>MASO</b>	Munitions Accountable System Officer
<b>MASS</b>	Munitions Accountable System Section
<b>MC</b>	Mission Capable

<b>MDD</b>	Maintenance Data Documentation
<b>MDS</b>	Mission, Design, Series
<b>MEL</b>	Minimum of Equipment Listing
<b>MEP</b>	Munitions Employment Plan
<b>MESL</b>	Minimum Essential Subsystems List
<b>MFG</b>	Munitions Family Group
<b>MHE</b>	Material Handling Equipment
<b>MICAP</b>	Mission Capability
<b>MM</b>	Modification Management
<b>MMHE</b>	Munition Material Handling Equipment
<b>MOC</b>	Maintenance Operations Center
<b>MOD</b>	Modification
<b>MPE</b>	Management Process Evaluation
<b>MPR</b>	Maintenance Personnel Record
<b>MPRL</b>	Minimum Proficiency Requirement Loading
<b>MRA</b>	Minimum Reserve Authorization
<b>MRSP</b>	Mission Ready Spares Kit
<b>MS</b>	Mission System
<b>MSA</b>	Munitions Storage Area
<b>MSAP</b>	Maintenance Self Assessment Program
<b>MSK</b>	Mission Spares Kit
<b>MTBF</b>	Mean Time Between Failure
<b>MTP</b>	Master Training Plan
<b>MXS</b>	Maintenance Squadron
<b>M3O</b>	Monthly Due-Out Validation Listing
<b>NDT</b>	NonDestructive Testing
<b>NGB</b>	National Guard Bureau
<b>NHA</b>	Next Higher Assembly
<b>NIE</b>	Normally Installed Equipment
<b>NMC</b>	Not Mission Capable
<b>NRTS</b>	Not Repairable This Station
<b>NSA</b>	National Security Agency
<b>NSN</b>	National Stock Number
<b>OAP</b>	Oil Analysis Program
<b>OAS</b>	Offensive Avionics System
<b>OCF</b>	Operational Check Flight
<b>OCONUS</b>	Out of Continental United States
<b>OFP</b>	Operational Flight Program
<b>OG</b>	Operations Group
<b>OI</b>	Operating Instruction
<b>OIC</b>	Officer In Charge
<b>OLO</b>	Operations Liaison Officer
<b>OPLAN</b>	Operations Plan
<b>ORI</b>	Operational Readiness Inspection
<b>OSHA</b>	Occupational Safety and Health Act
<b>OT&amp;E</b>	Operational Test and Evaluation
<b>OTI</b>	Onetime Inspection
<b>P</b>	Permanent
<b>PAA</b>	Primary Authorized Aircraft
<b>PAD</b>	Propellant Actuated Device
<b>PAMS</b>	PMEL Automated Management System

<b>PC</b>	Personal Computer
<b>PCS</b>	Permanent Change of Station
<b>PDM</b>	Programmed Depot Maintenance
<b>PIP</b>	Product Improvement Program
<b>PM</b>	Primary Munition
<b>PMC</b>	Partial Mission Capable
<b>PME</b>	Precision Measuring Equipment
<b>PMEL</b>	Precision Measurement Equipment Laboratory
<b>PMD</b>	Program Management Directive
<b>PMO</b>	Program Management Office
<b>PMR</b>	Program Management Review
<b>POC</b>	Point of Contact
<b>POL</b>	Petroleum, Oil, and Lubricants
<b>POS</b>	Peacetime Operating Stock
<b>PPE</b>	Personal Protective Equipment
<b>PQDR</b>	Product Quality Deficiency Report
<b>PRD</b>	Pilot Reported Discrepancy
<b>PS&amp;D</b>	Plans, Scheduling, and Documentation
<b>PSM</b>	Process Safety Management
<b>QA</b>	Quality Assurance
<b>QAE</b>	Quality Assurance Evaluator
<b>QAP</b>	Quality Assessment Program
<b>QAR</b>	Quality Assurance Representative
<b>QEC</b>	Quick Engine Change
<b>QP</b>	Quality Plan
<b>QPA</b>	Quality Per Assembly
<b>QPE</b>	Quality Process Evaluation
<b>QPRL</b>	Quarterly Proficiency Required Loading
<b>QRL</b>	Quick Reference List
<b>RAL</b>	Routine Assessment List
<b>RDT&amp;E</b>	Research, Development, Test and Evaluation
<b>R&amp;M</b>	Reliability and Maintainability
<b>REMIS</b>	Reliability and Maintainability Information System
<b>R&amp;R</b>	Repair and Reclamation
<b>RSP</b>	Readiness Spare Packages
<b>RWR</b>	Radar Warning Receiver
<b>S</b>	Safety
<b>SAN</b>	System Advisory Notice
<b>SAS</b>	Stability Augmentation System
<b>SBSS</b>	Standard Base Supply System
<b>SCL</b>	Standard Conventional Load
<b>SCNS</b>	Self Contained Navigational System
<b>SCR</b>	Special Certification Roster
<b>SE</b>	Support Equipment
<b>SEI</b>	Special Experience Identifier
<b>SFO</b>	Simulated Flameout (landing)
<b>SI</b>	Special Inspection
<b>SIOP</b>	Single Integrated Operations Plan
<b>SM</b>	Single Manager
<b>SM</b>	Support Munition
<b>SM</b>	System Manager

<b>SMO</b>	Squadron Maintenance Officer
<b>SORTS</b>	Status of Resources and Training System
<b>SPD</b>	System Program Director
<b>SPE</b>	Special Process Evaluation
<b>SPOC</b>	Single Point of Contact
<b>SPRAMS</b>	Special Purpose Recoverables Authorized Maintenance Spares
<b>SRU</b>	Shop Replaceable Unit
<b>T</b>	Temporary
<b>TA</b>	Transient Alert
<b>TACAN</b>	Tactical Air Navigation (System)
<b>TAL</b>	Task Assignment List
<b>TAMP</b>	Tactical Air Munitions Program
<b>TCAS</b>	Traffic Collision Avoidance System
<b>TCI</b>	Time Change Item
<b>TCTO</b>	Time Compliance Technical Order
<b>TD</b>	Temporary Duty
<b>TDY</b>	Temporary Duty
<b>TEC</b>	Technical Evaluation Code
<b>T/E/C</b>	Trainer/Evaluator/Certifier
<b>TMDE</b>	Test, Measurement, and Diagnostic Equipment
<b>TMRS</b>	Tactical Missile Record System
<b>TNB</b>	Tail Number Bins
<b>T.O.</b>	Technical Order
<b>TODO</b>	Technical Order Distribution Office
<b>TPFDL</b>	Time Phased Force Deployment List
<b>TQP</b>	Total Quality Program
<b>TRAP</b>	Tanks, Racks, Adapters, and Pylons
<b>TRIC</b>	Transaction Identification Code
<b>TRN</b>	Turn Around Transaction
<b>UCML</b>	Unit Committed Munitions List
<b>UGT</b>	Upgrade Training
<b>UJC</b>	Urgency Justification Code
<b>UND</b>	Urgency of Need Designator
<b>USADAC</b>	U S Army Defense Ammunition Center
<b>UTE</b>	Utilization Rate
<b>VIRP</b>	Variable Information Retrieval Program
<b>WCDO</b>	Wartime Consumable Distribution Objective
<b>WRM</b>	War Reserve Material
<b>WRMO</b>	War Reserve Material Officer
<b>WS</b>	Weapons Standardization
<b>WSEP</b>	Weapons System Evaluation Program
<b>WUC</b>	Work Unit Code
<b>WWM</b>	Wing Weapons Manager
<b>XB</b>	Expendable, Base
<b>XD</b>	Expendable, Depot
<b>XF</b>	Expendable, Field